Learning outcomes

Week by week Content coverage

Exemplar resources

Content coverage

Edexcel GCSE Geography B (2012)

Editable scheme of work

Practical support to help you deliver this Edexcel specification

We are happy to provide this scheme of work for you to amend and adapt to suit your teaching purposes.

We hope you find this useful.

Scheme of work

This scheme of work has been produced to help you implement this Edexcel specification. It is offered as an example of one possible model that you should feel free to adapt to meet your needs and is not intended to be in any way prescriptive. It is in editable Word format to make adaptation as easy as possible.

Other course planning support

You will find other support for planning the course in the Teacher Support Materials. These are free downloadable resource that you can access at:

<http://www.edexcel.com/quals/gcse/gcse09/geography/b/Pages/default.aspx>

Teaching resource exemplars

The scheme of work contains suggestions for resources that you can use to support your teaching. These are only suggestions of material you may find useful; you are encouraged to use a wide range of resources that suit the needs of your students.

Other Edexcel teaching resources

* **Student books** – full-colour textbooks matched to the specification.
* **ActiveBook** – a digital copy of the student book in the back of every copy.
* **Revision guides** – help students prepare for their exams.

Further details can be found at [www.pearsonschools.co.uk](http://www.pearsonschools.co.uk)

Edexcel Subject Advisors

Edexcel has a team of specialist subject advisors available to help you with implementation of this specification. You can contact them by email or phone.

Email: TeachingGeography@pearson.com
Telephone: 0844 372 2185

Edexcel additional support

Ask the Expert – puts you in direct email contact with over 200 of our senior subject experts.

Edexcel’s community forum – these message boards are designed to enable you to access peer-to-peer support from fellow Edexcel teaching and delivery staff in schools and colleges.

Health and safety

The practical work and fieldwork suggested within the scheme of work are those which we believe are not banned or restricted in any way and are still currently used in most schools and colleges.

Geography GCSE Specification B encourages fieldwork and practical skills within the context of controlled assessment and other teaching and learning.

We advise teachers and technicians to discuss the merits of the suggested practical work and fieldwork when deciding which to carry out and how they will be carried out.

You may have ideas for practical work and fieldwork which we have not suggested but would work just as well.

As in all practical and fieldwork, a risk assessment is expected as part of good health and safety practice in all centres, and we understand that many schools and colleges refer to the CLEAPSS service (<http://www.cleapss.org.uk/>) for guidance and support in conducting practical work and fieldwork. Reference to health and safety in the field is made in the specification.

Websites

There are links to relevant websites in this scheme of work. In order to ensure that the links are up to date, that they work, and that the sites are not inadvertently linked to sites that could be considered offensive, we have also made the links available on our website at [**www.pearsonhotlinks.co.uk**](http://www.pearsonhotlinks.co.uk/). If you find that a link from the scheme of work no longer works, please go to the pearsonhotlinks site, where you can also report if a link needs fixing.

Edexcel GCSE Geography B (2012)

The number of guided learning hours required for this qualification is 120­­–140, which equates to approximately 2 hours per week over 70 weeks. Guided learning hours mean the time when a teacher is present to give guidance. **This is a linear specification. All of the examinations are sat at the end of the course.**

**Scheme of work overview**

The specification contains 4 units, each worth 25% of the assessment:

* **Unit 1 Dynamic Planet**
* **Unit 2 People and the Planet**
* **Unit 3 Making Geographical Decisions**
* **Unit 4 Researching Geography**

Within Units 1 and 2 there are topic options as shown in the table below.

|  |  |  |  |
| --- | --- | --- | --- |
| **Unit 1 Dynamic Planet** * **Unit 4 Researching Geography**

 (27 weeks) | Section A (core topics)* Restless Earth
* Changing Climate
* Battle for the Biosphere
* Water World
 | Section B (option topics)* Coastal Change and Conflict **OR** River Processes and Pressures

Section C (option topics)* Oceans on the Edge **OR** Extreme Environments.
 | 24 teaching weeks (4 weeks per topic)+ 3 consolidation/assessment weeks  |
| **Unit 2 People and the Planet** (27 weeks) | Section A (core topics)* Population Dynamics
* Consuming Resources
* Globalisation
* Development Dilemmas
 | Section B (option topics)* The Changing Economy of the UK **OR** Changing Settlements in the UK.

Section C (option topics)* The Challenges of an Urban World **OR** The Challenges of a Rural World.
 | 24 teaching weeks ( 4 weeks per topic)+ 3 consolidation/assessment weeks  |
| **Unit 3 Making Geographical Decisions** (6 weeks) | 6 key ideas in the Specification.Unseen resource booklet in the examination.Decision making skills | 6 teaching weeks at the end of the course, followed by revision for Units 1 and 2. |
| **Unit 4 Researching Geography**(7 weeks) | Controlled Assessment. Internally assessed and externally moderated.  | **One** task is chosen from those provided by Edexcel. | 7 teaching weeks – at any point during the 2 years.  |
| Please note: many centres will find they have around 70 weeks available for a 2-year GCSE course. The 67-week scheme of work here allows for 3 weeks’ ‘slack’ to take account of over-runs in teaching, review days, and final revision.  |

**How this scheme of work can be used**

* This scheme of work is organised by teaching week (see column 1: Week). Each week assumes 2 lessons per week, each approximately 1 hour long. Each week addresses one **key idea** from the specification (see column 1)
* Each lesson is assigned **detailed content** from the specification (see column 2: Content coverage) which is one bullet from the ‘Detailed content’ column in the specification.
* Learning outcomes (see column 3) indicate what students need to learn and these are exemplified by possible teaching and learning activities in column 4.
* You can cut **✂** the options that you do not need in Sections B and C for Units 1 and 2.
* In the ‘Exemplar resources’ column, reference is made to websites and other resources which could be used to support teaching and learning. In order to avoid long repetition in this column, the following abbreviations are used:

|  |  |
| --- | --- |
| **Resource** | **Abbreviated to** |
| Edexcel GCSE Geography B student book (Edexcel) | TB-Edex |
| GCSE Geography Edexcel B book (OUP) | TB-OUP |
| Edexcel Geography B Teacher Guide (Edexcel) | TG |
| Edexcel Geography B Controlled Assessment workbook (Edexcel) | CAWB |
| Edexcel Geography B ActiveTeach CD (Edexcel) | AT-CD |
| Sample Assessment Materials for this linear specification  | SAMs |
| Past examination papers from the previous modular version of this specification, with date/series indicated. | ExPJune10 |

**Using past examination papers**

Past examination papers from the previous modular version of this specification may be used to support this new linear version of the specification. However, there are **significant differences** to some questions. In **Sections B and C** of Unit 1 and Unit 2, the longest questions now incorporate 3 marks for **Spelling, Punctuation and Grammar** (SPaG) and there are 8 mark extended writing questions. In Unit 3, 3 marks for SPaG are incorporated into one of the longer questions in **Section C**. Please see the SAMs and accompanying mark schemes for details of this change. When using questions from past examination papers, marks should be awarded for SPaG and mark tariffs may need to be increased to reflect the new assessment model. Guidance on the SPaG levels can be found in the SAMs.

**Section B (Units 1 and 2) and Controlled Assessment (Unit 4)**

The Geography controlled assessment (coursework) in Unit 4 links most closely with the option topics in Section B of Units 1 and B and C of Unit 2, as shown in the table below.

|  |  |
| --- | --- |
| **Unit 1 Dynamic Planet**  | **Unit 2 People and the Planet** |
| Coastal Change and Conflict🡻 | River Processes and Pressures🡻 | Changing Settlements in the UK andThe Challenges of an Urban World🡻 | Changing Settlements in the UK andThe Challenges of a Rural World.🡻 |
| **Controlled Assessment**Theme: Coastal EnvironmentsTask question 1Task question 2 | **Controlled Assessment**Theme: River EnvironmentsTask question 1Task question 2 | **Controlled Assessment**Theme: Town/City environmentsTask question 1Task question 2 | **Controlled Assessment**These: Rural/Countryside environments Task question 1Task question 2 |

**One** controlled assessment task question is chosen every year. The task questions change on an annual basis although the themes remain the same. Some centres will stick with the same themes year on year, e.g. Rivers, whereas others may wish to change theme from one year to the next. You may wish to consider the following.

* The order in which you teach the core topics in Units 1 and 2.
* It is likely to be desirable to have taught the linked Section B option choice before you carry out the controlled assessment, so that students can use some of the conceptual knowledge and understanding they have covered in class to support their controlled assessment.
* It may be possible to carry out a very brief pilot fieldwork study during the teaching of the Section B option. For instance, if you were visiting the coast as part of Section B Coastal Change and Conflict, some time could be set aside to collect some data and practise some techniques.
* If you change controlled assessment theme from one year to the next, you may wish to change the order of teaching units/topics to fit in with this.

Additionally, when teaching the linked Section B option choice, some **Geographical Information Systems** could be used in the classroom as a way of introducing the concept of GIS, which is an important aspect of the controlled assessment. Many GIS applications can be found free on the web. Many local authorities have GIS mapping systems, for example Nottingham City Council’s InsightMapping system [http://info.nottinghamcity.gov.uk/insightmapping/#](http://info.nottinghamcity.gov.uk/insightmapping/). In addition, both Google Earth and Google Maps (now with StreetView) can be used. These GIS maps can be used to show local services, land use (satellite images), transport infrastructure, greenspace, etc. and, in the case of Google Maps, can easily be personalised with routes, transects, photos, way points and data points.

**Summary of key changes for first teaching in September 2012**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Unit 1** | **Unit 2** | **Unit 3** | **Unit 4** |
| **Content**  | Much of the content is similar. There has been a tightening up of requirements e.g. specific landforms are now named in Topics 5 and 6.]In Topic 2, the UK climate of the present day needs to be studied as well as climate in the past, and possible future climate.In Topic 8, both extreme environments need to be covered. | Some of the content is similar, but there are significant changes in some topics and some Topic titles have changed (previous in red):Section A:1. Population Dynamics
2. Consuming Resources
3. Globalisation ( Topic 8, World of Work)
4. Development Dilemmas (Topic 7)

Section B: 1. The Changing Economy of the UK ( Topic 4, Making a Living)
2. Changing Settlements in the UK (Topic 3, Living Spaces)

Section C:1. The Challenges of an Urban World ( Topic 5, Changing Cities)
2. The Challenges of a Rural World ( Topic 6, Changing Countryside)
 | 6 Key ideas are now provided which form the content of this Unit.These should be taught in preparation for the Unit 3 Decision Making exercise.Students are required to make links between different parts of Unit 1 and 2, and the 6 Unit 3 themes. | There have been some minor changes to the links between the content of Unit 1 and 2, and the controlled assessment themes.  |
| **Assessment** | 75 minute exam, not 60 minutes as previously.SPaG marks added.Extended writing mark tariff increased from 6 to 8 marks. | 75 minute exam, not 60 minutes as previously.SPaG marks added.Extended writing mark tariff increased from 6 to 8 marks. | Unseen resource booklet, not pre-release as previously. Links between topics (synoptic links) form part of the assessment. 90 minute exam, not 60 minutes as previously.SPaG marks added.Extended writing mark tariff increased form 9 marks to 12 marks. | Mark allocations for the sections of the Controlled Assessment have changed – please see page 37 of the Specification. Students are required to produce a controlled assessment submission on around 2000 words – please see page 40 of the Specification. |

**Unit 1 Dynamic Planet Section A core topics**

**Restless Earth**

**1.1 How and why do Earth’s tectonic plates move?**

**1.2 What are the effects and management issues resulting from tectonic hazards?**

| Week  | Content coverage | Learning outcomes | Exemplar activities | Exemplar resources |
| --- | --- | --- | --- | --- |
| 1Earth’s interior has a layered structure, with different composition and physical properties; the Earth’s core generates heat and convection currents drives plate motion | 1.1a Interpreting a cross-section of the Earth, with details (temperature, density, composition, physical state) of layered structure (including the atmosphere); using rock samples to contrast continental and oceanic crust. | * Identify the main features of the Earth’s layered structure.
* Recognise the differences between rocks of the oceanic and continental crust.
 | * Students create a series of composite annotated diagrams of the Earth’s structure.
* Practical activity using samples of granite (continental) and basalt (oceanic), and Eureka cans to calculate density of the two rock types.
 | TB-Edex page 12TB-OUP pages 8–9ExPJan11 Q1SAMs Q1aAnimations of internal structure [**Earth’s structure**](http://www.learner.org/interactives/dynamicearth/structure.html)AT includes a class interactive activity of buzzword bingo: key tectonic terms. |
| Examine the core’s internal heat source (through radioactive decay) and how this generates convection which drives plate motion and generates the Earth’smagnetic field. | * Understand how the tectonic plates move.
* Be able to explain convection in the mantle.
* Outline how Earth’s magnetic field is generated.
 | * Draw a labelled diagram of a cross-section across a constructive margin to show convection and plate movement.
* Briefly research Earth’s magnetic field.
 | TB-Edex page 13TB-OUP pages 10–11Mantle convection animation: [**Convection**](http://education.sdsc.edu/optiputer/flash/convection.htm) [**BBC Bitesize tectonics**](http://www.bbc.co.uk/schools/gcsebitesize/geography/natural_hazards/)[**BGS magnetic field**](http://www.geomag.bgs.ac.uk/education/earthmag.html) |
| 2There are conservative, constructive and destructive plate boundaries, each with characteristic volcanic and earthquake hazards. | 1.1b Explain the distribution of the three plate margin types, and identify major plates. | * Name the major tectonic plates.
* Identify and explain different plate-margin types.
* Describe the distribution to earthquakes and volcanoes.
 | * Complete an outline world map of tectonic plates by naming major plates and highlighting different boundary types.
* Students search Google Earth layers to visualise the connections between earthquakes, volcanoes and plate boundaries.
* View animations of different boundary types and use to help label diagrams.
 | TB-Edex pages 13–14: detail on plate boundariesTB-OUP pages 12–15ExPJan12 Q1[**Google Earth tectonics**](http://magmacumlaude.blogspot.com/2009/02/using-google-earth-to-visualize.html)[**Plate boundary types animation**](http://www.learner.org/interactives/dynamicearth/plate.html) |
| Examining the causes of contrasting volcanic (volcano type, magma type and explosivity) and earthquake (shallow versus deep, magnitude) hazards, including tsunami, at contrasting example locations, e.g. Iceland and Indonesia. | * Understand how types of tectonic activity relate to types of plate boundary.
* Knowledge of examples of contrasting eruptions and earthquakes.
 | * Research contrasting volcano examples, e.g. Mauna Loa or Nyiragongo versus Pinatubo, Merapi, Soufrierre Hills.
* Complete a table contrasting VEI numbers, eruptive styles and magma types.
* Fact files of two recent, contrasting earthquakes, e.g. Christchurch, NZ (very shallow) versus Sichuan in 2008.
* Draw a labelled diagram of how tsunami are generated by earthquakes.
 | TB-Edex pages 15–17TB-OUP pages 16–23ExPJune11 Q1SAMs Q1bStaffordshire Learning Net Web Enquiry: *Are all volcanoes the same?* [**SLN volcanoes**](http://www.sln.org.uk/geography/enquiry/we25.htm)[**YouTube**](http://www.youtube.com/) for recent events (view clips prior to showing them to a class to check content/language is suitable).TG pages 22–23: additional activities on Montserrat.Montserrat Volcano Observatory: [**MVO**](http://www.mvo.ms/) |
| 3Volcanic and earthquake hazards affect people in different ways and at contrasting locations. | 1.2a Investigate the primary and secondary impacts of earthquakes in two named locations, e.g. the 2005 Kashmir versus1989 Loma Prieta earthquakes. To include reasons for contrasting Impacts on property and people. | * Identify the different impacts of two earthquakes on people and the environment.
* Understand effects in the developed and developing world, and how and why they differ.
 | * Write definitions of primary and secondary hazards.
* Students describe the impacts of volcanic and earthquakes on property and lives through images.
* Contrasting country images can also make good discussion points.
* Students create a table to compare the impact of events and suggest reasons for their findings (see textbooks for possible examples and table headings).
 | TB-Edex pages 18–20TB-OUP pages 16–23AT-CD BBC Active video clip: Kobe EarthquakeExPJune10 Q1ExPJan12 Q1AT includes a priority pyramid class interactive activity on surviving an earthquake (good decision-making practice for Unit 3). |
| Examine the primary and secondary economic and social impacts of one volcanic event. | * Understand the impacts of volcanic hazards on people and the economy of a named area.
 | * Spider diagrams of the impacts of eruptions, e.g. Mt Merapi in Indonesia or Mauna Loa on Hawaii.
* An image search on the internet (impact, volcano and earthquake) presents a wide range of potential impact images for whiteboard use.
 | TB-Edex pages 18–20TB-OUP pages 16–23ExPJan12 Q1SAMs Q1cView eruptions on YouTube. |
| 4Management of volcanic and earthquake hazards, at contrasting locations, ranging from short term relief to long-term planning, preparation and prediction. | 1.2b Examining the issue of prediction, warning and evacuation in relation to volcanic and earthquake hazards. Contrasting hazard-resistant design in the developed and developing world. | * Understand the different approaches to hazard management and the role of different players.
* Know that volcanic eruptions can often be predicted but earthquakes cannot.
* Compare buildings in the developed and developing world.
 | * Examine the disaster-management cycle.
* Consider different ways people can manage a tectonic hazard.
* Group work with individuals, researching who is responsible for on one part of the DMC: present to the rest of the group as a single A4 summary.
* Decision-making activity to integrate knowledge and introduce decision-making exercise (DME) skills.
* Produce a list of the ‘top 10’ items to go into a personal earthquake survival kit.
 | TB-Edex pages 21–25TB-OUP pages 16–23ExPJune11 Q1Disaster management cycle: [**Disaster Management Cycle**](http://www.gdrc.org/uem/disasters/1-dm_cycle.html)Decision-making activities for earthquakes and volcanoes include San Francisco, which has a good introduction in the Edexcel GCSE Geography B Student Book and an online decision-making exercise (DME) at: [**SanFran**](http://www.juicygeography.co.uk/googleearthsanfran.htm)USGS hazard-preparation advice:[**USGS prepare**](http://earthquake.usgs.gov/prepare/) |
| Evaluate the role of immediate response and relief efforts linked to a named tectonic hazard event, for example the Izmit earthquake in 1999. | * Recognise the importance of rapid reaction after a tectonic hazard.
* Knowledge of a named relief effort.
 | * Produce a timeline of a named event, e.g. Montserrat eruption in 1995 or Haiti Earthquake in 2010.
* Annotate the timelines with key events in terms of rescue, relief and recovery.
* The BBC news archive website can be used for the 2010 Haiti event.
 | TB-Edex pages 21–25TB-OUP pages 16–23ExPJan11 Q1Montserrat is a case study in the Edexcel GCSE Geography B Student Book and features at: [**Montserrat**](http://www.juicygeography.co.uk/montserrat.htm)**.** Plus the Montserrat Volcano Observatory [**MVO**](http://www.mvo.ms/)*Thinking about Disasters* pack (with video) from Christian Aid. |

**Changing Climate**

**2.1 How and why has climate changed in the past?**

**2.2 What challenges might our future climate present us with?**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Week  | **Content coverage** | **Learning outcomes** | **Exemplar activities** | **Exemplar resources** |
| 5Climate has changed in the past through natural causes, on timescales ranging from hundreds to millions of years. | 2.1a Examine past climate change on different timescales including the ‘Ice Ages’ in the Quaternary and UK climate since Roman times. | * Recognise that the Earth’s climate has changed significantly over time.
* Be aware of change on different timescales.
* Understand that past climate change had natural causes.
 | * Watch BBC clip and use the activity (*Discovering Antarctica Ice Core)* to understand how past climate is reconstructed.
* Describe temperature change on graphs showing past climate changes on different timescales.
 | TB-Edex page 28: graphs and activities to support causes of climate change.TB-OUP pages 24–25ExPJan12 Q2BBC Bitesize content on climate change:[**Bitesize climate change**](http://www.bbc.co.uk/schools/gcsebitesize/geography/climate_change/) |
| Explore the natural causes of climate change, including asteroid collisions, orbital changes, volcanic activity and variations in solar output. | * Explain the natural causes of past climates.
* Understand the role of orbital changes (long timescales).
* Understand the role of sunspots in short/medium timescales.
* Recognise that volcanic activity can cause cooling for short periods.
 | * Watch BBC clip and then produce a diagram to show Earth’s orbit and axis effects.
* Read Chapter 2 from Edexcel GCSE Geography B Student Book on other changes and add annotations to earlier diagram.
* Produce a summary table for natural causes using the headings cause / timescale / processes / warming or cooling.
 | TB-Edex pages 29–30TB-OUP pages 26–27 ExPJune10 Q2[**BBC Learning Zone**](http://www.bbc.co.uk/learningzone/clips) *Evidence of climate change* (BBC Education Class Clip 1490)*Discovering Antarctica Ice Core* activity at: [**Discoveringantarctica**](http://www.discoveringantarctica.org.uk/3a_climate.php)*Earth Orbit and Albedo* (BBC Education Class Clip 1491).AT includes a sequencing class interactive activity on tackling climate change. |
| 6Natural climate change in the past has affected people and the environment. | 2.1b Examine the impact of a short-term historical event on people and the environment, e.g. the ‘Little Ice Age’. | * Understand that climate has posed a challenge for people and ecosystems in the past
* Develop knowledge of the changes that occurred during the Little Ice Age.
 | * Analyse images, written accounts, data and graphs to draw conclusions about the Little Ice Age’s impact on ecosystems, people and agriculture.
 | TB-Edex page 31 text and images on climate change to introduce the Little Ice Age.TB-OUP pages 28–29ExPJan11 Q2ExPJune11 Q2More detail on living during the Little Ice Age at: [**Little Ice Age**](http://eo.ucar.edu/educators/ClimateDiscovery/LIA_lesson3_9.28.05.pdf) |
| Consider the impact of major climatic changes in geological time, e.g. the mass extinction of megafauna at the end of the Quaternary. | * Know some of the ice age megafauna.
* Consider the role of climate and other factors in extinction.
 | * Debate ‘the role of climate in the extinction of megafauna at the end of the last ice age’.
 | TB-Edex pages 32–33 gives one viewpoint which can be debated against another view shown by this BBC News story at: [**Extinction**](http://news.bbc.co.uk/1/hi/world/asia-pacific/7555206.stm)TB-OUP pages 30–31 |
| 7The climate of the UK appears to be changing as a result of global changes caused by human activity. | 2.2a Investigate the climate of the UK today, including temperature, rainfall and seasonality, and consider why these might change in the future including reference to ocean currents and air masses. | * Know the detail of the UK climate and seasons.
* Recognise the role of air masses and how they affect seasons.
* Examine projections of future UK climate.
 | * Use data to plot and then annotate a climate graph for a UK location.
* Produce a simple map of air masses and their characteristics.
* Consider the impact on the UK climate of latitudinal shifts in air masses (i.e. less frequent polar air).
* Examine the UK Climate Impacts Programme website for projections.
 | Met Office UK climate database:[**metoffice**](http://www.metoffice.gov.uk/weather/uk/climate.html)Air masses on the BBC:[**bitesize**](http://www.bbc.co.uk/scotland/learning/bitesize/standard/geography/weather_climate/air_masses_rev1.shtml)Air masses on the Met Office (video):[**metoffice**](http://www.metoffice.gov.uk/education/teachers/videos/what-are-air-masses)UKCIP for future projections:[**http://www.ukcip.org.uk/**](http://www.ukcip.org.uk/) |
| Examine how human activities produce rising levels of carbon dioxide and methane and how these contribute to the enhanced greenhouse effect. | * Recognise that human activities produce greenhouse gases.
* Analyse the growth of greenhouse gases and who contributes to it.
* Be able to explain the enhanced greenhouse effect (as well as the natural greenhouse effect).
 | * Interpret topological maps to describe CO2 emissions by country; suggest reasons for the country proportions. Work in pairs to compare findings with other maps (other greenhouse gases, rates of increase or decrease, emissions in 1980, etc.) and present findings to the class.
* Produce a table of greenhouse gases (name, sources, formula, contribution to warming).
* Draw a line graph of growth in greenhouse gases and growth in global warming gases. Describe and explain the graph.
 | TB-Edex pages 36–37TB-OUP pages 32–33ExPJan11 Q2ExPJan12 Q2ExPJune11 Q2SAMs Q2bNational Geographic online content on global warming:[**NG global warming**](http://environment.nationalgeographic.com/environment/global-warming/)Use topological maps of CO2 emissions from Worldmapper map index for other maps of the same type at: [**Worldmapper**](http://www.worldmapper.org/textindex/text_pollution.html)[**GCSE Bitesize climate change**](http://www.bbc.co.uk/schools/gcsebitesize/geography/climate_change/) |
| 8Future climates are uncertain but likely to present major economic and environmental challenges to the UK and, especially, to people in the developing world. | 2.2b Consider a range of projections for global temperature change and sea level rise, including reasons for the uncertainty. | * Know what the range of temperature and sea-level projections is into the future.
* Consider why these are uncertain.
 | * Use graphs of temperature and sea-level projections; annotate the graphs to describe the projections.
* Consider why projections become more uncertain the further into the future projections go.
 | TB-Edex page 37TB-OUP pages 34–35TG page 33: additional material on Australia and the Kyoto agreement. Websites of the IPCC and UNEP for graphs of projections:[**http://www.unep.org/**](http://www.unep.org/)**http://www.ipcc.ch/** |
| Examine the possible economic and environmental impacts of future climate change for the UK and in one named developing country, e.g. Bangladesh. | * Examine the impacts of future climate change.
* Compare economic and environmental impacts in different countries.
 | * Use a range of resources to develop a case-study card for ‘Climate change impacts in the UK’.
* Use written and video evidence to produce a case-study card on ‘Climate change impact in Bangladesh’.
* Pair work: students work in pairs to design case-study cards for the UK and Bangladesh and then each work on a separate case study before pair teaching and peer assessing their case studies through a sample question.
 | TB-Edex pages 38–39TB-OUP pages 36–39AT-CD BBC Active video clip: climate change impacts BangladeshExPJune10 Q2 ExPJan11 Q2ExPJan12 Q2SAMs Q2cOxfam slideshow on the impacts of climate change on Bangladesh:[**Oxfam Bangladesh**](http://www.oxfam.org.uk/get_involved/campaign/climate_change/bangladesh-audio-slideshow.html)GeoActive (Nelson Thornes) 259 *UK Climate Change.* Bangladesh river bank erosion at: [**River bank**](http://www.youtube.com/watch?v=sz25JXOtwIA)Bangladesh saltwater deposits at: [**Saltwater**](http://www.youtube.com/watch?v=h3wAS5qgncA)AT includes a ‘hot spot’ class interactive activity on rating places that will suffer the consequences of global warming, e.g. Bangladesh. |
| 9 | Consolidation and assessment week | * Review Restless Earth and Climate and Change topics.
 | * Use the AT-CD glossary function to test key terminology definitions.
* Formal assessment using SAMs Foundation and Higher tier Unit 1 question 1 and question 2.
 | TB-Edex Examzone pages 26–27TB-Edex Examzone pages 40–41AT-CD Examzone, KnowZone multiple choice questions. |

**Battle for the Biosphere**

**3.1 What is the value of the biosphere?**

**3.2 How have humans affected the biosphere and how might it be conserved?**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Week  | **Content coverage** | **Learning outcomes** | **Exemplar activities** | **Exemplar resources** |
| 10The distribution of global biomes reflects climate as well as other localized factors. | 3.1a Define the terms ecosystem and biome, and map the distribution of major biomes across the planet. | * Define the terms biome and ecosystem.
* Know what the world’s major biomes are (forests, grasslands).
* Describe the distribution on the major biomes on the planet’s surface.
 | * Draw and annotate a diagram of a small-scale ecosystem and its interconnections.
* Define biomes and use an atlas map to the pattern on an outline world map
* View class clips on selected biomes and make brief notes or annotate images.
 | TB-Edex page 42TB-OUP page 40ExPJune10 Q3SAMs Q3aMost atlases have biome, climate zone/climate graph, ocean current and physical maps.BBC Education Class Clips 3205 *Tropical Rain Forest*, 3206 *Desert*, 3208 *Mountain*, 3207 *Savannah* provide good lesson starters. |
| Evaluate the role of temperature and precipitation in explaining biome location, plus local factors including altitude and soils. | * Explain the distribution of biomes based on precipitation and temperature.
* Know the importance of local factors in influencing biome location/type.
* Evaluate the relative importance of these factors.
 | * Annotate the outline map (above) to suggest reasons for their distribution based on latitude, altitude, proximity to water and ocean currents.
* Group work: students produce a fact file on a named biome in a particular country with climate graph annotated with connections to biome location and nature of the ecosystem, including local factors.
* Display fact files on a board around a world map to understand the bigger picture.
 | TB-Edex pages 42–43TB-OUP pages 41–43ExPJune11 Q3ExPJan12 Q3SAMs Q3aAtlases, library or internet research and the Edexcel GCSE Geography B Student Book to produce a fact file. Blue planet biomes: with information on each biome type:[**Blueplanetbiomes**](http://www.blueplanetbiomes.org/world_biomes.htm)A more detailed site from UCMP Berkeley:[**Berkeley biomes**](http://www.ucmp.berkeley.edu/glossary/gloss5/biome/) |
| 11The biosphere acts as a ‘life support system’, and produces a wide range of goods. | 3.1b Explain how the biosphere regulates the composition of the atmosphere, maintains soil health and influences the hydrological cycle. | * Understand the interdependence between ecosystems and people.
* Define ecosystem services.
* Illustrate the role of a biome, e.g. the rainforest, in regulating key physical systems.
 | * Look at diagrams on biosphere interaction with hydrosphere, atmosphere and lithosphere and discuss what services we take for granted which they provide (e.g. water purification, O2 production, nutrient cycling, etc.)
* Teacher leads in creating an improved version of Figure 5 in Chapter 3 of the Edexcel GCSE Geography B Student Book.
 | TB-Edex pages 44–47: Figure 5 shows the goods and services from the biosphere. Figure 2 in Chapter 4 shows hydrological cycle interaction with the biosphere.TB-OUP pages 44–45ExPJune10 Q3ExPJan11 Q3ExPJan12 Q3BBC Bitesize ecosystems[**Bitesize ecosystems**](http://www.bbc.co.uk/schools/gcsebitesize/geography/ecosystems) Natural Resources Canada on forests and the value of forests: [**NRCan**](http://cfs.nrcan.gc.ca/pages/64) |
| Investigate how the biosphere provides humans with a range of goods including food, medicines and raw materials. | * Define ecosystems goods.
* Explain the range and value of goods provided by named ecosystems/biomes.
 | * Produce a spider diagram of goods provided by a named biome/ecosystem.
* Add who the goods provide value to, i.e. the players involved.
 | TB-Edex pages 44–47TB-OUP pages 44–45ExPJune10 Q3 ExPJan11 Q3ExPJan12 Q3 AT includes a class interactive activity on the relative importance of what the biosphere does for humans. Channel 4 Planet.com programme: *Biodiversity* |
| 12The biosphere is being degraded by human actions. | 3.2a Consider the role of human activity in direct destruction of tropical forests including. Deforestation for timber, mining, conversion to agricultural land. | * Recognise the direct actions of humans in degrading rainforests.
* Illustrate the impact of human activity on a named area.
 | * Produce a short report on the balance between beneficial uses, conservation and destruction in the Amazon rainforest, e.g. ‘Can rainforests be used in a sustainable way?’
* This can also cover sustainable use in the next lesson.
* Use Google Earth to view areas of deforestation in Amazonia or elsewhere.
 | TB-Edex pages 48–49TB-OUP pages 46–47SAMs Q3bAT-CD BBC Active video clip: Fires in the AmazonTG pages 44–46 additional material on Amazonia. * Staffordshire Learning Net Web Enquiry: *Should Brazil have the right to exploit its forest:* [**Brazil forests**](http://www.sln.org.uk/geography/enquiry/we26.htm)
* A good lesson starter is the BBC Education Class Clip 3906 *Rainforest degrading.*
* AT includes a class interactive activity the sequence of effects in a rainforest.
 |
| Examine how degradation of the biosphere by indirect means including the of climate-change on tropical forests | * Explain the range of indirect effects that pollution and climate change have on the biosphere.
 | * Read the article from the Mongabay website and rank the seriousness of the impacts outlined, including climate change.
 | TB-Edex pages 50–51TB-OUP pages 48–451[**rainforests.mongabay**](http://rainforests.mongabay.com/0814.htm) |
| 13Management measures, at a variety of scales, are being used to conserve the biosphere and make human use of it more sustainable. | 3.2b Examine two contrasting examples of biosphere conservation, including one global scale approach e.g. RAMSAR or CITES and one national or local approach e.g. UK National Parks, a tropical rainforest reserve. | * Understand that management is needed at a variety of scales to make biosphere use more sustainable.
* Use two examples of contrasting strategies to illustrate different approaches.
 | * Use a table format to compare the advantages and disadvantages of different approaches (CITES, UK NPs, biosphere reserves).
 | TB-Edex pages 52–53TB-OUP pages 52–53ExPJan11 Q3ExPJune11 Q3AT includes a class interactive activity on a fragile ecosystem, the Galapagos.Biosphere reserves: [**UNESCO**](http://portal.unesco.org/geography/en/ev.php-URL_ID%3D8763%26URL_DO%3DDO_TOPIC%26URL_SECTION%3D201.html)CITES: [**http://www.cites.org/**](http://www.cites.org/) Website of the LDNP and useful factsheets:[**Lake District NP**](http://www.lakedistrict.gov.uk/learning/educational_publications_and_resources_) |
| Examine the challenges of producing sustainable outcomes in economic, social and environmental terms and there may be tensions between these goals.  | * Understand the concept of sustainable use of ecosystems.
* Research a small-scale, named example of biosphere management and consider the impact of management on people and the ecosystem.
 | * Watch BBC clip on local scale and make simple case study notes.
* Role play activity based on the clip with students arguing for different uses of the area.
* Use either of the textbooks to produce a factfile on sustainable management, including its key features.
 | TB-Edex page 53TB-OUP pages 54–55 Example of local case study is the BBC Education Class Clip 3097 *Small-scale sustainable agroforestry in Costa Rica.* |

**Water World**

**4.1 Why is water important to the health of the planet?**

**4.2 How can water resources be managed sustainably?**

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| Week  | **Content coverage** | **Learning outcomes** | **Exemplar activities** | **Exemplar resources** |
| 14The hydrological cycle regulates water supply and links the atmosphere, biosphere and lithosphere. | 4.1a Investigate the role of the biosphere and the lithosphere in regulating the hydrological cycle and ensuring water supply. | * Know the main stores and flows of the hydrological cycle.
 | * Use BBC clip and diagrams to record terms and definitions.
* Then produce a bingo card of chosen terms for teacher definition calls.
 | TB-Edex page 56TB-OUP page 56BBC Education Class Clip 406 *The hydrological cycle* Figures 1 and 2 in Chapter 4 of the Edexcel GCSE Geography B Student Book. Encyclopaedia of the Earth:[**Hydrological cycle**](http://www.eoearth.org/article/Hydrologic_cycle) |
| Explain how the hydrological cycle works, as a system of interlinked stores and transfers, including the processes of evaporation, condensation, precipitation and run-off. | * Be able to define key hydrological cycle terminology and processes.
 | * Sketch a fully labelled diagram of the hydrological cycle with stores and transfers.
* Undertake some experiments in the school grounds to look at rates of precipitation, infiltration, evaporation, etc.
 | TB-Edex page 57TB-OUP pages 57–59SAMs Q4a and 4bExPJune11 Q4AT includes a class interactive activity on the hydrological cycle. |
| 15Changes to the hydrological cycle can affect both human and eco-system health. | 4.1b Examine the impact of climate change on the hydrological cycle, including rainfall reliability and groundwater levels, in areas which already experience aridity. | * Consider how hydrological systems might change with climate change.
* Focus on areas which are already arid.
 | * Students record a geographical podcast (case study) of Australia and its water supply issues now, and what climate change will hold. (Linked to activity above.)
 | TB-Edex pages 60–61TB-OUP page 63 Free mp3 recording software at: [**http://audacity.sourceforge.net**](http://audacity.sourceforge.net/) |
| Investigate the impact of unreliable and insufficient water supply on humans, using a case study from a vulnerable area, e.g. the Sahel. | * Explain how changes in water supplies can impact people and ecosystems.
* Use a case study to illustrate changes and stresses.
 | * Watch BBC clips on increasing water use and its impact in the Sonoran Desert.
* Record the uses of water, why the rate is increasing and the impact it has on people and the environment.
* Chapter 4 activity from Edexcel GCSE Geography B Student Book to consider other causes of water shortages.
* Write a list of similarities and differences between changing water supply in different countries.
 | TB-Edex pages 58–59TB-OUP pages 60–63ExPJan12 Q4Good class starter material from BBC Education Class Clips 3098 *Sonoran Desert*, *USA*, and 3099 *Lowering the water table.*GeoActive (Nelson Thornes) 398 *Water resource issues in drought-stricken Australia* and a BBC News search on the Australian bush fires of 2009. |
| 16There are many threats to maintaining a healthy hydrological cycle. | 4.2a Consider the consequences of human activities on water quality including sewage disposal, industrial pollution and intensive agriculture. | * Recognise ways in which people interfere with water quality and water supplies.
* Define and describe the process of eutrophication.
 | * Produce a flow diagram showing water pollution sources and consequences/impacts for a river system.
* Produce a flow diagram of eutrophication.
* Make a table contrasting the sources of water pollution in developed and developing countries.
 | TB-Edex pages 62–63TB-OUP pages 64–65ExPJan11 Q4The Water Pollution Guide is a useful website:[**http://www.water-pollution.org.uk/**](http://www.water-pollution.org.uk/)Further information with GeoActive (Nelson Thornes) 271 *Water resource use and distribution* Channel 4 Planet.com programme: *Water*. |
| Examine located examples of human activities which disrupt water supply including deforestation, over abstraction of groundwater and reservoir construction. | * Use named examples to illustrate water supply issues caused by humans.
 | * Research examples such as the Colorado River (dams and over abstraction), the Aral Sea (diversion) and groundwater withdrawal.
 | TB-Edex pages 62–63TB-OUP pages 66–67AT-CD BBC Active video clip: The Colorado trickles to the SeaGroundwater mining in India:[**Groundwater-mining-india**](http://news.nationalgeographic.com/news/2010/12/101231-groundwater-mining-drought-india-freshwater/)National Geographic Aral Sea: [**Aral Sea**](http://news.nationalgeographic.com/news/2010/04/100402-aral-sea-story/) ExPJan12 Q4SAMs Q4b TG page 56 additional material on the Aral Sea |
| 17There is a range of strategies, at a variety of scales, designed to manage water resources more sustainably using different levels of technology. | 4.2b Consider the costs and benefits of large-scale water management projects in the developed world and developing world, e.g. The Three Gorges dam and Colorado River. | * Explain the costs and benefits of a large-scale water management project.
 | * Students produce a matrix of positive and negative impacts of the Three Gorges Dam Project sub-divided into social, economic and environmental categories.
* Students say whether or not they agree with the Three Gorges Dam Project using their matrix to back up their point of view.
 | TB-Edex pages 64–65TB-OUP pages 68–69ExPJune10 Q4ExPJan11 Q4Information at Channel 4 Changing Climate: Programme 2 *The three gorges dam project.*More information at GeoActive (Nelson Thornes) 383 *The three gorges dam project.*International Rivers, Three Gorges Dam:[**Three Gorges Dam**](http://www.internationalrivers.org/china/three-gorges-dam)China’s Three Gorges Corporation:[**CTG.com.cn**](http://www.ctg.com.cn/en/) |
| Examine the role of named small-scale intermediate technology solutions such as water harvesting in the developing world. | * Understand how innovation and intermediate technology can solve local water problems in LEDCs
 | * Students produce a short PowerPoint of different case studies showing their sustainable aspects and explain how they are intermediate technology projects.
 | TB-Edex pages 66–67 case study on hand pumped water in Tanzania with an activity and website.TB-OUP pages 70–71ExPJune10 Q4SAMs Q4cTG page 57 making decisions: water supply in the UKRainwater harvesting pumpkin tanks:[**Pumpkin Tank**](http://www2.warwick.ac.uk/fac/sci/eng/research/civil/crg/dtu/pubs/rn/rwh/cs01/)Water aid website: [**http://www.wateraid.org/uk/**](http://www.wateraid.org/uk/) |
| 18 | Consolidation and assessment week | * Review Battle for the Biosphere and Water World topics.
 | * Use the AT-CD glossary function to test key terminology definitions.
* Formal assessment using SAMs Foundation and Higher tier Unit 1 question 3 and question 4.
 | TB-Edex Examzone pages 54–55TB-Edex Examzone pages 68–69AT-CD Examzone, KnowZone multiple choice questions |

**Unit 1 Dynamic Planet Section B option topics**

**Coastal Change and Conflict**

**5.1 How are different coastlines produced by physical processes?**

**5.2 Why does conflict occur on the coast and how can this be managed?**

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| Week  | **Content coverage** | **Learning outcomes** | **Exemplar activities** | **Exemplar resources** |
| 19Geological structure and rock type have a major influence on coastal development and landforms. | 5.1a Investigate the contrasts between a named soft rock coast and a named hard rock coast in terms of cliff profiles, cliff features and erosional land forms. | * To know how different rock types affect the coastline.
* To describe some of the landforms on coastlines with hard and soft rock.
 | * Students use an atlas geology map to find named stretches of coastline that are made of particular rocks.
* Students then locate pictures of these coastlines using FLICKR / Geograph and annotate to name and describe the features before deciding if they are hard or soft rock types.
* For extension they could be added to Google Earth or Google Maps.
 | TB-Edex page 70TB-OUP pages 72–73 BBC Bitesize coasts:[**Coasts**](http://www.bbc.co.uk/schools/gcsebitesize/geography/coasts/)University of Wisconsin coastal processes and landforms:[**UWSP Coasts**](http://www4.uwsp.edu/geo/faculty/ritter/geog101/textbook/coastal_systems/coastal_landforms_and_processes.html) |
| Compare concordant and discordant coasts (headlands and bays), and assess the influence of rock type, joints and faults. | * Understand the difference between these two types of coast in terms of rock strata/structure.
* Consider how geology influences the development of both types.
 | * Students work in groups to research concordant and discordant coastline to produce a better entry into Wikipedia by locating good graphics, animations and references.
* Students could write a page in an html editor or a word processor.
 | TB-Edex page 71TB-OUP pages 74–75 Wikipedia entries on concordant and discordant coasts:[**Concordant\_coastline**](http://en.wikipedia.org/wiki/Concordant_coastline)[**Discordant\_coastline**](http://en.wikipedia.org/wiki/Discordant_coastline)Google sites are good for web writing and displaying: [**http://sites.google.com/site/sites/**](http://sites.google.com/site/sites/) |
| 20Marine processes, sub-aerial processes, mass movement and climate change are also important. | 5.1b Investigate how waves, sub-aerial processes and mass movement create a range of erosional landforms including cliffs, wave cut platforms, caves, arches and stacks and how deposition and longshore drift creates beaches, bars and spits. | * Understand the physical processes which act on coastal geology to create distinctive landforms.
* Define different types of erosion.
* Define longshore drift and explain how it creates coastal landforms.
* Define the term ‘sub-aerial processes’.
* Explain how weathering affects coasts and cliffs.
* Examine why mass movement occurs at some coasts.
 | * Fieldwork to study erosion, transport, deposition and weathering associated with a coast or through virtual fieldwork.
* Students create a flickbook of a changing coastal landform using one of the BBC Education Class Clips as inspiration.
* On the back of the flickbook they write the explanation of the processes at work.
* Peer assessment increases the range of processes students cover.
* Draw and label a cliff cross-section including a landslide (rotational slide) and add details of weathering and mass-movement processes.
 | TB-Edex pages 72–73TB-OUP pages 76–79ExPJune10 Q5ExPJan11 Q5ExPJune11 Q5GeoActive (Nelson Thornes) 356 *Coastal Fieldwork* is good and has data that can be used in the classroom.Virtual fieldwork (of Reculver) at: [**Reculver**](http://www.georesources.co.uk/recintro.htm)BBC Education Class Clip archive has good clips on coastal regions: East Riding of Yorkshire coastal processes:**http://www.eastriding.gov.uk/coastalexplorer/pdf/2coastalprocesses.pdf**European Environment Agency coasts pages: **EEA coasts**[**Coastal-erosion-and-landforms**](http://www.bbc.co.uk/learningzone/clips/coastal-erosion-and-landforms/9966.html) |
| Explore the possible consequences of climate change on marine erosion and deposition including an increase frequency of storms and rising sea-level. | * Outline how sea level may produce submerged coasts in the future.
 | * Use Google Earth/Google Maps to view contrasting coastlines (emergent/submergent).
 | TB-Edex pages 74–75TB-OUP pages 82–83 |
| 21Physical processes lead to coastal change and retreat, which threatens people and property and generates conflicting views. | 5.2a Investigate a coastline experiencing rapid coastal retreat, e.g. Holderness, to examine why rates of erosion vary and the threats posed to people and the environment by rapid erosion. | * Know the factors affecting cliff retreat.
* Identify the nature of the threat, i.e. rate of retreat.
* Explain how coastal retreat causes problems in a named location.
 | * Students produce an annotated diagram to show the stages of cliff retreat with its causes.
* Annotated maps can be used to show recession in 50 years’ time.
 | TB-Edex pages 76–77TB-OUP pages 82–83.TG page 67 additional material on Dunwich SAMs Q5aWave power activity: [**http://www.pbs.org/wnet/savageseas/multimedia/wavemachine.html**](http://www.pbs.org/wnet/savageseas/multimedia/wavemachine.html) BBC GCSE Bitesize Geography has video material on coastal retreat: [**Bitesize**](http://www.bbc.co.uk/schools/gcsebitesize/geography/)Holderness as an example of coastline retreat at: [**Holderness**](http://www.hull.ac.uk/coastalobs/general/erosionandflooding/erosion.html)BBC News offers a good site to search for coastline stories.Royal Geographical Society Jurassic Coast:[**Jurassic Coast**](http://www.rgs.org/OurWork/Schools/Geography%2Bin%2Bthe%2BNews/Ask%2Bthe%2Bexperts/Jurassic%2BCoast.htm) |
| Exploring the conflicting views of how the case study coastal area should be managed. | * Explain the effects of coastal retreat on people and the environment.
 | * In groups, do an internet search for the impact of retreat on people and the environment, set up by topic (agriculture, tourism, transport, housing, etc.) and then feed back to the class.
* Produce a conflict matrix for the chosen coast.
* Role play exercise to debate different approaches to managing the coast.
 | TB-Edex pages 78–79TB-OUP page 85ExPJan12 Q5SAMs Q5bUSGS coastal conflicts:[**USA coastal conflicts**](http://pubs.usgs.gov/circ/c1075/conflicts.html)BBC Bitesize coastal conflicts:[**Coastal conflicts**](http://www.bbc.co.uk/schools/gcsebitesize/geography/coasts/coastal_management_rev1.shtml) |
| 22There is a range of coastal management options from traditional hard engineering to more modern holistic approaches. | 5.2b For a name coastline investigate the costs and benefits of traditional hard engineering structures including groynes and sea walls.  | * Understand the advantages and disadvantages of the different coastal management techniques with respect to a named coastline.
 | * Students use a case study to understand the unique situation for the location and its problems (as above).
* Evaluate different methods by scoring a range of techniques on their advantages and disadvantages, and making a decision specific to the chosen coastline.
* Actual or virtual fieldwork should be used to support this.
 | TB-Edex pages 80–83 tables of advantages and disadvantages for hard and soft engineering methods.TB-OUP pages 84–87ExPJan11 Q5ExPJan12 Q5Virtual fieldwork example of Reculver at: [**Reculver**](http://www.georesources.co.uk/recintro.htm)Geoactive (Nelson Thornes) 407.East Yorkshire Coastal Observatory (Holderness):[**Coastal Obs**](http://www.hull.ac.uk/coastalobs/general/index.html) |
| Consider the costs and benefits of soft engineering, including beach replenishment and more radical approaches including ‘do nothing’ and ‘strategic realignment’ linked to Integrated Coastal Zone Management (ICZM) . | * Define ICZM.
* Define beach nourishment.
* Explain the costs and benefits of options such as do nothing and strategic realignment.
 | * Use a table format to evaluate different radical options in terms of their costs and benefits for a named coast, and for different groups of people.
 | TB-Edex pages 80–83TB-OUP pages 86–87ExPJan12 Q5 Useful summary of options from Suffolk Coasts and Heaths AONB:[**Management Options**](http://www.suffolkcoastandheaths.org/uploads/Coastal%20Knowledge%205%20Coastline%20Management.pdf)Abbots Hall Farm coastal realignment:[**abbotts\_hall\_farm**](http://www.essexwt.org.uk/visitor_centres__nature_reserves/abbotts_hall_farm/) |

**River Processes and Pressures**

**6.1 How do river systems develop?**

**6.2 Why do rivers flood and how can flooding be managed?**

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| Week  | **Content coverage** | **Learning outcomes** | **Exemplar activities** | **Exemplar resources** |
| 19River systems develop characteristic landforms and channel shapes along their long profile, from source to mouth. | 6.1a Explain landform contrasts between upper courses, mid-courses and lower courses of rivers. | * To define the key drainage basin terms.
* Be able to describe different landforms along a river long profile.
* Explain how landforms form, e.g. meanders, oxbow lakes.
 | * Watch the BBC clip and look at terms in the Edexcel GCSE Geography B Student Book.
* Card matching: definition of erosion and transportation processes to key terms.
* Consider how the relative importance of the processes varies from source to mouth.
* Use an A3 map sheet or A3 Google Map to trace the River Tees and add images/diagrams of the landforms.
 | TB-Edex pages 86–90TB-OUP pages 88–95ExPJan11 Q6ExPJune11 Q6Use the BBC Education Class Clip 3238 *The watershed.*AT includes an animation showing the formation of an ox-bow lake, and a class interactive activity on the features of a meander.GeoActive (Nelson Thornes) 330 *River landforms on the River Tees*.Research the Internet to find suitable images and maps |
| Investigate how channel shape and characteristics change along a long profile for a named river including width , depth, velocity and gradient. | * Describe the change in shape and characteristics of a river channel and its valley from source to mouth.
 | * Add cross-sectional drawings to key points along the river using the A3 sheet from above.
* Use OS maps to investigate the pattern of contours at points along the cross section.
 | TB-Edex pages 86–90TB-OUP pages 88–95ExPJune10 Q6BBC Bitesize Geography: [**BBC Bitesize rivers**](http://www.bbc.co.uk/schools/gcsebitesize/geography/water_rivers/background_rivers_rev1.shtml)Scottish Agricultural College on long profiles:[**Long profile**](http://www.sac.ac.uk/mainrep/pdfs/geographystreamsandrivers.pdf) |
| 20These characteristics result from processes of erosion, transport and deposition, with geology and slope processes also playing a role. | 6.1b Investigating the role of erosion processes, transport and deposition in river landform formation including meanders, interlocking spurs, waterfalls, floodplains, levees and oxbow lakes. | * Understand the processes of erosion (abrasion, attrition, hydraulic action) transport (traction, saltation, suspension, solution) and deposition.
* Explain how processes contribute to landform formation.
 | * Draw a diagram of the four river transport processes.
* View the class clips and draw summary diagrams of landforms/label diagrams to explain processes.
* Use fieldwork to study erosion, transport, deposition and weathering associated with a river or through virtual fieldwork.
* Students create a flip book of a changing river landform using one of the example clips as inspiration. On the back of the flipbook, students write the explanation of the processes at work. Peer assessment increases the range of processes students cover.
 | TB-Edex pages 86–90TB-OUP pages 88–95ExPJune10 Q6ExPJan12 Q6GeoActive (Nelson Thornes) 251 *River fieldwork.*Use virtual fieldwork at: [**Virtual Mersey**](http://www.merseybasin.org.uk/page.asp?id=3036) BBC Education Class Clips 400, 401 *Erosion*, 403 *Meanders*, 405 *Oxbow lakes*, 402 *River terracing*, 404 *Waterfalls.*BBC Education Class Clip 323 *Weathering/Erosion/Deposition.* Flipbook example:[**Flipbook Oxbow**](http://www.benettonplay.com/toys/flipbookdeluxe/player.php?id=356523)BBC Bitesize erosion types:[**Erosion in rivers**](http://www.bbc.co.uk/schools/gcsebitesize/geography/water_rivers/river_processes_rev1.shtml) |
| Investigate the influence of geology and slope processes on river valley shape and sediment load. | * Outline how slope processes/mass movement influence valley shape.
* Explain how sediment load is influenced by rock type.
 | * Draw a labelled diagram showing weathering and slope movements in a valley cross section.
* Practical activity using different rock types (granite, limestone, sandstone, shale) and considering how weathering/erosion produces different sediment types.
 | TB-Edex pages 90–91TB-OUP pages 88–95BBC Bitesize weathering:[**Weathering**](http://www.bbc.co.uk/schools/ks3bitesize/science/environment_earth_universe/rock_cycle/revise6.shtml) |
| 21River flooding has natural causes, but flooding may be made worse by human activities, including those causing climate change. | 6.2a Investigate the factors that cause rivers to flood using hydrographs of two contrasting rivers, one with a short lag time and one with a long lag time. | * To know the major physical and human factors that cause flooding.
* Be able to label the components of hydrograph.
 | * Create a spider diagram of the potential causes of flooding complete with explanations of how each one works in connection with the storm hydrograph.
* Label the components on an outline hydrograph.
* Draw contrasting discharge lines for urban, forested and steep drainage basins.
 | TB-Edex pages 92–93TB-OUP pages 96–101SAMs Q6aGeoActive (Nelson Thornes) 346 *River hydrographs* for information on hydrographs.USGS water cycle, streamflow and hydrographs:[**USGS streamflow**](http://ga.water.usgs.gov/edu/watercyclestreamflow.html) |
| Examine how human actions can alter hydrograph shape and increase flood risk through urbanisation and land use change, e.g. deforestation. | * Define deforestation and urbanisation.
* Explain how both increase food risk.
* Use process terminology with accuracy.
 | * Use OS maps and the Environment Agency website/flood risk maps to consider how land use impacts flood risk.
* Search the internet for deforestation and flood risk.
* Draw hydrographs for forested and deforested catchments.
 | TB-Edex pages 92–93TB-OUP pages 96–101ExPJan11 Q6ExPJune11 Q6 SAMs Q6bAT includes a class interactive activity on the Sydney storms.Environment Agency flood risk:**environment-agency** |
| 22Flood management involves both traditional hard engineering and more modern, integrated and sustainable approaches. | 6.2b Investigate the impacts of flooding and effectiveness of flood defences for a case study e.g. Carlisle (2004), York (2002) or River Severn (2007). | * Describe flood defences for a case-study location.
* Examine the impacts of a named flood event.
 | * Read an account of a flood and extract the impacts into a table with categories of socio-economic and environmental impacts.
* They can then subdivide these into short, medium and long term.
* Use Google Earth to view flood defences, e.g. in York.
 | TB-Edex pages 94–95 used to draw up a table or a newspaper report or television broadcast of a recent event could be used.TB-OUP pages 102–103AT-CD BBC Active video clip: Flooding on the River Severn (3x clips)AT includes a BBC Active video clip of the flooding in Tewksbury in 2007 and on the cost of flood defences. GeoActive (Nelson Thornes) 394 *2007 Floods in UK* is good for recent wide-scale floods. |
| Compare one traditional hard engineering , flood-management schemes, e.g. York, with one soft engineering approach e.g. River Skerne, and assess their respective costs and benefits. | * Understand the advantages and disadvantages of the different approaches to flood reduction.
 | * Read up on the three main approaches to flood management (prevention, prediction and control) and techniques in each category.
* Weigh up the advantages and disadvantages of different flood management techniques and write a comparative and justified response to give their view of the best approach.
 | TB-Edex pages 96–99TB-OUP pages 104–105ExPJan12 Q6bBBC Education Class Clip 3078 shows good examples of hard engineering.TG page 79 restoring the River SoweRiver Skerne restoration:[**therrc**](http://www.therrc.co.uk/rrc_river_projects1.php?csid=38)Environment Agency flood management plans:[**Flood planning**](http://www.environment-agency.gov.uk/research/planning/33586.aspx)The Geographical Association flood risk pages:[**GA Flood Risk**](http://www.geography.org.uk/resources/flooding/) |

**Unit 1 Dynamic Planet Section C option topics**

**Oceans on the Edge**

**7.1 How and why are some ecosystems threatened with destruction?**

**7.2 How should ecosystems be managed sustainably?**

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| Week  | **Content coverage** | **Learning outcomes** | **Exemplar activities** | **Exemplar resources** |
| 23Human activities are degrading and destroying marine eco-systems on a global scale. | 7.1a Investigating the global pattern of either coral reefs or mangrove swamps and how this has changed in the past 50 years. | * Describe the global distribution of one marine ecosystem, e.g. coral reefs or mangroves.
* Identify how humans use the ecosystem and how this has effected the distribution.
 | * Use an outline world map to map the distribution.
* Relate this, briefly, to climate and other factors (proximity to land, river mouths).
* Spider diagram of uses (goods and services), e.g. food supply, tourism, fuel, building materials, coastal defence.
 | TB-Edex pages 102–103 has a good case study and activity on a mangrove swamp.TB-OUP pages 106–107AT-CD BBC Active video clip: Mangrove WorldMore detail on mangrove swamps using Oxfam project at: [**Oxfam Mangroves**](http://www.oxfam.org.uk/coolplanet/kidsweb/world/viet_nam/vietoxf3.htm) ‘Your climate your life’ coastal ecosystems:[**Intro to coastal ecosystems**](http://www.yourclimateyourlife.org.uk/a_coasts_ecosys.html) |
| Explain the global threats to this marine ecosystem to explain its changed distribution, through human activities including overfishing, pollution and waste disposal from both land and ocean sources, tourism and other development.  | * Describe the impacts of human activities on a named marine ecosystem.
* Define key terms, such as overfishing and eutrophication.
 | * List the threats to the chosen ecosystem and rank them in order of importance/severity of the threat.
* Map global marine dead zone on an outline world map.
 | TB-Edex pages 104–106TB-OUP pages 108–109ExPJune11 Q7TG page 89 pollution in the Mediterranean.AT includes a class interactive activity on Factors causing damage to coral reefs.Detailed info on reef threats:[**Reefbase**](http://www.reefbase.org/)National Geographic mangroves:[**NG mangroves**](http://ngm.nationalgeographic.com/2007/02/mangroves/warne-text)BBC DVD Blue Planet series is excellent on threats to marine areas as well as details of different ecosystems. |
| 24Unsustainable use of marine eco-systems leads to the disruption of food webs and nutrient cycles and can lead to extinction. | 7.1b Investigate physical processes in marine ecosystems including marine food webs and nutrient cycles.  | * Know key terminology in the grazing chain (producers, consumers, etc.)
 | * Draw a food web and annotate with key terminology and energy/nutrient flows.
 | TB-Edex pages 105–106TB-OUP pages 110–111ExPJune10 Q7ExPJan11 Q7ExPJan12 Q7SAMs Q7aThe online activities below reinforce the ideas:Interactive marine food web: [**Food webs**](http://www.gould.edu.au/foodwebs/marine.htm)Create an ocean food web: [**foodchains**](http://www.vtaide.com/png/foodchains.htm) and [**oceanweb**](http://www.vtaide.com/png/oceanweb2.htm)Antarctic Biodiversity: [**Antarctic Biodiversity**](http://planetearth.nerc.ac.uk/multimedia/story.aspx?id=18) |
| Examine how these processes can be disrupted through overfishing, eutrophication and siltation, as well as the impacts of climate change such as bleaching and species migration. | * Explain how marine food webs might become damaged.
* Define key terms such as siltation, eutrophication and overfishing.
* Understand that climate change brings new and unpredictable stresses to oceans and marine ecosystems.
 | * Label a food web to explain how humans might impact the system including ‘Keystone species’, e.g. through overfishing.
* Search the internet for images of bleached and unbleached corals.
* Listen to/watch podcasts and use Chapter 7 from the Pearson Edexcel GCSE Geography B Student Book to write a mini report on ‘How might climate change impact marine ecosystems and why is it difficult to predict?’
 | TB-Edex pages 106–108 good notes on climate change impacts on food webs.TB-OUP pages 112–113ExPJan11 Q7ExPJune11 Q7SAMs Q7aMore information at Planet Earth Video and podcasts:[**Ocean circulation**](http://planetearth.nerc.ac.uk/multimedia/story.aspx?id=14) [**Ocean acidification**](http://planetearth.nerc.ac.uk/multimedia/story.aspx?id=15) NOAA coral bleaching:[**Bleaching**](http://oceanservice.noaa.gov/facts/coral_bleach.html) |
| 25The pressure to use marine eco-systems is growing, due to rising populations and resource demand, creating difficult choices for humans. | 7.2a Investigate the growing local pressures on a named and located marine ecosystem.  | * Know the threats faced by a small-scale marine ecosystem.
* Name and locate the chosen example.
 | * Produce a news story (paper, podcast or video) on ‘Ecological pressures in the Firth of Clyde and its future management’.
 | TB-Edex pages 109–111 has facts, opinions, maps, etc. on ecological pressures.SAMs Q7bTB-OUP pages 114–117FSC book ‘Coral Reefs: ecosystems in crisis’ on St Lucia + TG pages 90–91 for additional material on this case study. |
| Examining the conflicting views about how the chosen ecosystem should be managed. | * Explain why viewpoints on marine ecosystem management will vary and conflict.
 | * Use a conflict matrix with the different viewpoints and potential management plans shown (Chapter 7 of the Edexcel GCSE Geography B Student Book).
 | TB-Edex pages 109–111TB-OUP pages 114–117ExPJan12 Q7 |
| 26Sustainable management is needed locally and globally, if the oceans are to be protected from further degradation | 7.2b Compare two local case studies of marine management, e.g. sustainable management in St Lucia, management of fish stocks in the North Sea, marine reserves to establish the tensions between achieving economic and environmental sustainability.  | * Assess local attempts to manage oceans more sustainability.
 | * Class discussion of the meaning behind sustainability using the Venn diagram approach.
* Students then discuss different projects and place them onto the Venn diagram with clear explanation of their reasoning.
 | TB-Edex pages 112–113 has a number of management projects on different scales.TB-OUP pages 117–119SAMs Q7bList of resources on sustainability available at:[**Facing the Future**](http://www.facingthefuture.org/GlobalIssuesIntroduction/GlobalIssueResources/GeneralSustainability/tabid/253/Default.aspx)Website of the St Lucia SMMA**http://www.smma.org.lc/** |
| Assess the role of global actions to maintain ocean health, e.g. MARPOL and marine protected areas. | * Understand examples of global actions (or global frameworks).
* Weigh up their pros and cons.
 | * Brief research into global frameworks using the internet, e.g. Marine Protected Areas/Marine Reserves, the IWC, Marpol convention.
* Use a table format to evaluate the different approaches.
 | TB-Edex pages 114–115TB-OUP pages 118 & 120–121ExPJune10 Q7SAMs Q7bMarpol: [**Marpol wiki**](http://en.wikipedia.org/wiki/MARPOL_73/78)IWC: [**http://iwcoffice.org/**](http://iwcoffice.org/)Greenpeace marine reserves:[**marine-reserves**](http://www.greenpeace.org.uk/marine-reserves) |

**Extreme Environments**

**8.1 What are the challenges of extreme climates?**

**8.2 How can extreme environments be managed and protected from the threats they face?**

**NB BOTH extreme environments (polar and hot arid) must be studied.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Week  | **Content coverage** | **Learning outcomes** | **Exemplar activities** | **Exemplar resources** |
| 23Extreme climates are located in polar regions and hot arid areas; each has key physical characteristics and are fragile environments. | 8.1a Investigate the climate of polar and hot arid regions including precipitation, temperature range, seasonality and variability.  | * Describe the characteristics of a named extreme-climatic environment.
* Learn some key climate facts and figures for the locations.
 | * Students work in groups on different climatic locations to produce a presentation or poster on the climate characteristics.
* Draw a climate graphs for both, using atlas data.
 | TB-Edex pages 118–120 (hot arid) or 120–122 (cold) cover a range of extreme climates with facts, figures and images.TB-OUP pages 122–123 (hot arid)Climate data available from atlases.TG page 101: extreme climate in Dubai. |
| Examine why these are fragileenvironments and how flora and fauna have successfully adapted to the extreme climates but are also vulnerable to change. | * Explain how ecosystems have adapted to the environment.
* Understand that ecosystems in the area are vulnerable to change.
 | * Draw one or two examples of plants and animals and annotate the diagrams to show adaptations, e.g. small leaves, ground-hugging, fur, splayed feet, etc.
* Use textbooks to make brief notes on vulnerability.
 | TB-Edex pages 118–120 (hot arid) or 120–122 (cold)TB-OUP pages 124–125 (hot arid)ExPJune11 Q8ExPJan12 Q8Biome information from Berkeley:[**berkeley.biomes**](http://www.ucmp.berkeley.edu/glossary/gloss5/biome/) |
| 24People adapt to the challenges of extreme environments in a variety of ways. | 8.1b IInvestigate the adaptations people make in extreme environments, including farming methods, building styles, clothing, transport, energy use. | * Explain how people have adapted to life in that environment.
 | * Work in pairs or small groups to produce a virtual travel log of the extreme environment.
* Images of human activities and people supported by text/captions. This could be in the form of an oral report, podcast, travel journal, etc.
 | TB-Edex pages 122–123 (cold) or pages 124–125 (hot arid): a good starting point and template for the research.TB-OUP pages 126–127 (hot arid)ExPJune10 Q8 ExPJan11 Q8SAMs Q8aYouTube clips, Michael Palin (also [**http://www.palinstravels.co.uk/**](http://www.palinstravels.co.uk/)), Billy Connelly and other travel DVDs can be a good source of material. As can travel writing, for example by Bill Bryson. |
| Examine the culture and uniqueness of peoples living in the chosen extreme climate and the value of this culture to others. | * Understand that people living in these environments make a unique and valuable contribution to world culture.
 | * Briefly research life and culture in the extreme environment.
* Write a diary entry referring to daily life, including unique hardships, cultural traditions, foods and housing.
 | TB-Edex pages 122–123 (cold) or pages 124–125 (hot arid)TB-OUP pages 128–129 (hot arid)AT-CD BBC Active video clip: a tradition dies in the ArcticExPJan12 Q8Wikipedia pages on the Tuareg people:[**Tuareg\_people**](http://en.wikipedia.org/wiki/Tuareg_people)UNEP polar people web pages:[**grida.no/polar/**](http://www.grida.no/polar/ipy/2842.aspx) |
| 25Extreme environments are under threat from a range of processes, which include climate change. | 8.2a Investigate the threats to people and natural systems in extreme environments,including out-migration because of limited economic opportunities, cultural dilution through tourism, pollution though resource exploitation and land degradationthrough poor land management. | * Describe the physical and human threats faced by one extreme environment.
* Define key relevant terms for the chosen extreme environment.
 | * Use the online comic creation program Pixton to produce a comic strip on life in a threatened extreme environment to cover the physical and human threats.
* Then remix by online sharing and improving the cartoons.
 | TB-Edex pages 124–125 has material on both the Sahel and Alaska for both parts of this section.TB-OUP pages 130–131 (hot arid)SAMs Q8aNational Geographic desert threats:[**NG/desert-threats/**](http://environment.nationalgeographic.com/environment/habitats/desert-threats/)WWF threats to the Arctic: [**WWF Arctic**](http://wwf.panda.org/what_we_do/where_we_work/arctic/)Online comic creation on Pixton website: [**http://pixton.com/**](http://pixton.com/) |
| Investigate how climate change could threaten natural systems, including melting of permafrost, loss of sea ice, desertification and species migration and the impact of these of traditional economies. | * Explain how climate change could further threaten this environment and its people.
 | * Annotate a line graph of future temperature projections with changes resulting from a warming and/or more arid climate (see websites above and use textbooks).
 | TB-Edex pages 128–129TB-OUP pages 132–133 (hot arid)ExPJune10 Q8Graphs of temperature projections, as well as many other useful graphics for both extreme environments can be found here:[**grida.no/graphicslib/**](http://www.grida.no/graphicslib/detail/greenhouse-gas-emissions-scenarios-and-surface-temperature-projections_880b) |
| 26Sustainable management is needed locally and globally, if communities in extreme environments are to survive. | 8.2b Assess a range of local actions, e.g. intermediate technology and adaptationto changing climates, and assess their effectiveness in achieving a sustainable future for local communities. | * Understand that a range of local management strategies can help protect this environment.
 | * Take the studied environment and produce a leaflet on strategies to make a more sustainable life.
 | TB-Edex pages 130–131 has some ideas but they will need tweaking to specific environments and may need some individual student research.TB-OUP pages 134–135 (hot arid)ExPJan11 Q8SAMs Q8bTG page 102 managing Denali NP in Alaska.  |
| Assess the role of global actions to protect extreme environments from the threat of climate change. | * Explain how global actions might protect the extreme environment from climate change.
 | * Produce a brief timeline of climate change action.
* In pairs, research specific agreements/meetings (Kyoto, Copenhagen, 1987 Montreal Protocol on CFCs, 1992 Rio Summit, etc.) to add to the timeline.
 | TB-Edex pages 130–131TB-OUP pages 136–137 (hot arid)SAMs Q8b |
| 27 | Consolidation and assessment week (Section B and C options) | * Review of the Section B and Section C option choices.
 | * Use the AT-CD glossary function to test key terminology definitions.
* Formal assessment using SAMs Foundation and Higher tier Unit 1 questions 5 or 6 and questions 7 or 8.
 | TB-Edex Examzone pages 84–85 (Coasts)TB-Edex Examzone pages 100–101 (Rivers)TB-Edex Examzone pages 116–117 (Oceans)TB-Edex Examzone pages 132–133 (Extreme climate)AT-CD Examzone, KnowZone multiple choice questions |