

Topic Name	RCUK Topic Description	Panel	Further descriptors and/or topic breakdown (for cross-cutting topics)
Atmospheric kinetics	Reaction rates for atmospheric chemical processes as a function of temperature and pressure. Atmospheric cross-sections and photo-dissociation yields of atmospheric gases.	B	
Behavioural ecology	Behavioural strategies used by organisms in their natural environment to maximise fitness. Foraging, social and reproductive (including parental care, sexual selection and mate choice) behaviour. Behavioural responses to predators, communication, migration and homing.	C	
Biogeochemical cycles	Fluxes and cycling of matter within and between the biosphere and the physical environment.	B	Physical processes relating to fluxes and cycling of matter within and between the biosphere and the physical environment.
		C	Biological processes relating to fluxes and cycling of matter within and between the biosphere and the physical environment.
Boundary layer meteorology	Models of local and regional airflow and dispersion. Understanding of airflow over complex surfaces. Urban meteorology; links to air pollutant formation and dispersion.	B	
Climate and climate change	Modelling and analysis of current and past climate, variability and causes of change on all timescales. Understanding and modelling future climate change, detection and attribution of past change. Prediction of impacts of climate change on the environment.	A	Palaeoclimatology, modelling and analysis of past climate. Detection and attribution of past change.
		B	Understanding, modelling and analysis of current and future climate change. Prediction of impacts of climate change on the environment.
Community ecology	The structure, composition and dynamics of ecological assemblages. Relationship between species assemblages and their environments, trophic structure; succession, stability, biodiversity, coexistence and competitive exclusion, spatial structure and relative abundance of component species.	C	
Conservation ecology	Science underpinning the restoration and conservation of species and communities and their natural habitat.	C	
Earth engineering	Engineering geology. Geotechnical aspects of civil engineering, the construction and extraction industries.	A	
Earth resources	Studies of the origins, location, identification, and science underpinning the exploration and exploitation of natural Earth resource materials (other than water and biological resources including soils).	A	
Earth surface processes	Evolution of the landscape, landforms and coasts through natural processes. Physical and chemical weathering.	A	Includes geomorphology/geomorphological processes

Ecosystem-scale processes and land use	Large-scale ecology (including marine ecosystems). Catchment and regional studies. Landscape ecology. Interactions between ecology and land use patterns.	C	
Ecotoxicology	Diagnostics, tolerance and adaption in relation to natural and anthropogenic toxic substances.	C	
Environment and health	The relationship between environmental variables and human health. Sources, sinks and pathways of potentially harmful chemicals and organisms present in the natural environment that may have an effect on human health.	B	Sources, sinks and pathways of potentially harmful chemicals/bioaerosols in the atmosphere.
		C	All other aspects of environment and health.
Environmental biotechnology	Development of sustainable insect pest management strategies. Environmental impacts of GMOs. Understanding and controlling zoonotic diseases. Novel approaches to the identification, quantification and exploitation of disease-related genes in the environment. Biological tools for the monitoring, transformation and amelioration of the environment	C	
Environmental genomics	Understanding the response of organisms to their natural environment at the level of the genome.	C	
Environmental informatics	Research and system development focusing on the environmental sciences relating to the creation, collection, storage, processing, modelling, interpretation, display and dissemination of data and information.	All	
Environmental microbiology	All aspects of environmental influence on, and effects of, microbial systems; bioremediation; microbial diversity.	C	
Environmental physiology	Studies of the physiological responses of plants and animals to the environment; homeostasis, stress and physiological responses; survival strategies.	C	
Geohazards	The prediction, monitoring, environmental effects, risks and mitigation of long-term, extreme and catastrophic natural geological events including landslips, earthquakes and volcanic eruptions. Assessment of frequency and magnitude of triggers and events.	A	
Glacial and cryospheric systems	Origins, processes of formation, characteristics and impacts of glacial, ice cap, shelf ice and sea ice features. Physical, chemical and biological processes in the cryosphere. Glacial tectonics and ice deformation. Periglacial processes. Determination of glacial events from the geological record. Interactions between the cryosphere and the atmosphere, terrestrial and aquatic environments.	B	
Hydrogeology	The physical, chemical and biological processes which occur at the interface between rock and water at or below the Earth's surface at all scales.	A	Earth Surface processes (sediment, transport, geomorphology)

	Water-related geological processes beneath oceans. Aquifers and groundwater resources. Response of aquifers to environmental change.	B	Changes in hydrological cycle under climate change
Hydrological processes	Measurement and modelling of the factors influencing the flow of water in and to freshwater, estuarine and coastal environments. Surface water resources. Hydrological extremes including prediction methods for flood forecasting.	A	Earth Surface processes (sediment, transport, geomorphology)
		B	Changes in hydrological cycle
Land - atmosphere interactions	Quantification and modelling of the fluxes and transformations of material and energy between the land (including the biosphere) and the atmosphere. Variability of these interactions in time and space.	B	
Land - ocean interactions	Quantification and modelling of the fluxes and transformations of material and energy between the terrestrial and marine environments. Variability of these interactions in time and space.	B	
Large scale atmospheric dynamics and transport	Global circulation of the troposphere and stratosphere, including time variability, wave motions (from small-scale gravity waves to large-scale planetary waves and equatorial waves) and their effect on the radiation balance, large scale transport and mixing processes in the free troposphere and stratosphere.	B	
Mantle and core processes (Geosciences)	Studies of the processes which determine the behaviour and composition of the Earth's mantle and core.	A	
Ocean - atmosphere interactions	Quantification and modelling of the fluxes and transformations of material and energy between the marine and atmospheric environments. Feedback mechanisms. Coupled ocean/atmosphere models. Variability of these interactions in time and space.	B	
Ocean circulation	Studies of water circulation in seas and oceans on a variety of temporal and spatial scales based on modelling and/or observations. Extreme water circulation events.	B	
Palaeoenvironments	Investigation of past environments and causes of change. Reconstruction of environmental change in the pre-Quaternary past.	A	
Palaeobiology	The study of fossil organisms, their occurrence and modes of preservation. Biostratigraphy and palaeobiogeography. Fossils as a diagnostic and interpretative tool.	C	
Physics & chemistry of earth materials	Physical and chemical characteristics of naturally occurring minerals and Earth minerals. Experimental petrology and geochemistry under simulated natural conditions. Origins and transformations of materials.	A	

Planetary surfaces and geology	Measurement of the Earth and its gravitational field. Techniques and data derived from studying other extraterrestrial bodies specifically to enhance understanding of the Earth System.	A	
Pollution	Production, transport, transformation, interaction and effects of substances which are present at concentrations above those normally expected in a clean environment. Understanding the long- term availability and fate of pollutants and waste materials.	All	
Population genetics and evolution	Speciation and population genetics, gene flow/population structure, hybrid zones, island populations, genetic drift and conservation genetics. Adaptation and the evolution of life histories.	C	
Population ecology (Ecology, biodiversity & systematics)	Understanding of population dynamics, including trophic interactions. Demography of populations. Extinction processes. Spatial processes and metapopulation dynamics.	C	
Quaternary science	Studies of the environment and environmental change during the Quaternary period.	A	
Radiative processes and effects	Observations and modelling of radiation from the ultra-violet to the infrared and microwave. Field, laboratory and modelling studies of radiation and its effects on the environment.	B	
Regional weather and extreme events	Studies of weather in the context of environmental impact. Observation, simulation and forecasting of extreme events, such as hurricanes, tornadoes, and dispersion of volcanic plumes.	B	
Science-based archaeology	The application of physical, chemical and biological techniques to aid scientific archaeological and geoarchaeological investigations. Development and application to archaeology of dating, analytical, statistical and modelling techniques relating to human ecology and evolutionary history; archaeological conservation; archaeological prospecting; materials analysis.	A	The application of physical, chemical and biological techniques to aid geoarchaeological investigations.
		C	Development and application to archaeology of dating, analytical, statistical and modelling techniques relating to human ecology and evolutionary history; archaeological conservation; archaeological prospecting; materials analysis.
Sediments and sedimentary processes	Provenance, transport, depositional processes, diagenesis, preservation, erosion and interpretation of modern and preserved sediments in marine, coastal, estuarine, fluvial, lacustrine and terrestrial environments. Stratigraphy. Basin analysis, hydrocarbon reservoirs.	A	
Soil Science	Physical, chemical, biological properties and processes in soils. Geographical distribution. Decomposition processes, transfer and transport of heat, water, nutrients and contaminants. Soil organisms.	A	Proposals where the emphasis is on physical and chemical properties and processes.
		C	Proposals where the emphasis is on biological processes (involving organisms)
Stratospheric processes	Measurements, analysis, modelling and theoretical understanding of stratospheric physics and chemistry.	B	

Survey and monitoring	Environmental survey, mapping and monitoring (as the primary purpose of the activity, rather than as a tool).	All	
Systematics and taxonomy	Morphological, numerical and molecular methods of identifying and classifying living and fossil organisms in projects of ecological relevance. Reconstruction of phylogenies.	C	
Technology for environmental applications	Development of new, and the adaption of existing, technology and techniques with actual or potential generic or specific environmental applications.	All	
Tectonic processes	Processes affecting the large scale movement and deformation of the Earth's crust. Orogenesis, faulting, earthquakes and seismicity; neotectonics; tectonic control of sedimentation.	A	
Tropospheric processes	Understanding chemical reactions and spatial distribution of tropospheric gaseous constituents, and the formation of secondary pollutants. Tropospheric model validation incorporating chemistry and atmospheric transport.	B	
Upper atmosphere processes and geospace	The physics and chemistry of the atmosphere above 50 km, including the coupling of energy, momentum and chemistry between the mesosphere and the stratosphere and thermosphere.	B	
Volcanic processes	Origin of ancient and modern volcanoes and vulcanicity. The location, history and structure of volcanoes, their emissions and deposits. Reconstruction of these characteristics and of Earth history from studies of volcanic materials and their impacts in the geological record.	A	
Water in the atmosphere	The distribution and transport of water in the climate system. Fluxes of momentum, heat and precipitation at or near the Earth's surface - measurement and model representation. The microphysical properties of clouds.	B	
Water quality	Measurement and modelling of processes that control water quality (on or below the surface) in standing and flowing water.	All	
Properties of earth materials	None	A	
Solar & Solar-terrestrial physics	Magnetosphere, ionosphere and solar-terrestrial science. Space weather. Solar influences on climate.	A	Impacts of solar and solar-terrestrial physics on the Earth's magnetic field.
		B	All other aspects of solar & solar-terrestrial physics