

		Key Terms		Monitoring/ Prediction strategies	
		Convection currents	The circular movement of magma within the earths mantle.	Earthquakes	-Sensitive seismometers used to measure tremors or foreshocks before the main earthquake. -Animals believed to act strangely when an earthquake is impending. -Smart phones have GPS (Global Positioning System) receivers and accelerators built in – can detect movements in ground, which are analysed to potentially warn others further away.
		Slab Pull	When the weight of a dense tectonic plate is subducted into the mantle.		
		Ridge push	When gravity causes the ridge to push on the lithosphere and move tectonic plates.		
		Oceanic crust	The thinner part of the earths crust (denser).	Vocanoes	-Thermal heat sensors detect changes in the temperature of the volcano’s surface. -Scientists measure the temperature of water in streams or rivers to sea if it has increased. -Satellites (GPS) monitor ground deformation (changes in the volcano’s surface).
		Continental Crust	The thicker part of the earths crust (less dense).		
		Lithosphere	The more rigid, outer part of the earth.		
		Asthenosphere	The upper layer of the Earths mantle.		
L’Aquila Earthquake, Italy (2009)					
Primary effects	-308 people were killed, 1500 injured and 67,500 were made homeless. –Approximately 10,000-15,000 buildings collapsed, including; San Salvatore Hospital, which had to be evacuated as it could not cope with injured victims; Several buildings in L’Aquila university, with some fatalities in student accommodation; many churches, medieval buildings and monuments with considerable cultural value.				
Secondary effects	-Aftershock triggered landslides and rock falls, causing damage to housing and transport. – The number of students at L’Aquila University has decreased. -- - The lack of housing for all residents meant house prices and rents increased. –Much of the city’s CBD was cordoned off due to unsafe buildings. Some ‘red zones’ still exist, which has reduced the amount of business, tourism and income.				
Immediate Responses	-Hotels provided shelter for 10,000 people. – The then prime minister Silvio Berlusconi, reportedly offered some of his homes as temporary shelters. – Within an hour the Italian Red Cross were searching for survivors. – British Red Cross raised £171,000 in support. –Mortgages and bills for Sky TV, gas and electric were suspended. –The Italian post office offered free mobile calls, raised donations and gave free delivery for products sold by small businesses.				
Long term responses	-Torch lit procession which took place with a catholic mass on the anniversary of the earthquake, as remembrance. –Residents did not have to pay taxes during 2010. -Students were given free public transport, discounts on educational equipment and were exempt from university fees for three years.				

Haiti Earthquake, (2010).		Protection strategies		Planning strategies	
Primary effects	-316,000 people killed -300,000 people injured -1.3 million Haitians made homeless. -200,000 homes were damaged, 100,000 destroyed –Loss of power to many areas –Roads were clocked by fallen buildings –Many government buildings, including the Presidential Palace, were destroyed.	Earthquakes	-Designing buildings and strengthening roads and bridges to withstand earthquakes (mitigation). - Features of earthquake resistant buildings: automatic shutters come down over windows, identification number visible for helicopters, reinforced latticework foundations deep in bedrock, rubber shock-absorbers between foundations and super-structures; fire resistant materials.	Earthquakes	-Furniture and objects can be fastened down so they are secure from toppling over. – Residents can learn how to turn off the main gas, electricity and water supply to their properties. –On September 1 st each year the Japanese practise earthquake drills on a national training day. – The American Red Cross provide an earthquake safety checklist to help people plan/prepare for earthquakes in their homes/ schools/ at work.
Secondary effects	-By Nov 2010, there were outbreaks of Cholera. –The Haitian tourist industry declined as tourists stopped visiting. –Many dead bodies in the streets and under rubble created a health hazard in the heat, so many had to be buried in mass graves. –There were frequent power cuts.			Vocanoes	-Individuals need to evacuate their homes to a safe location under the instruction of authorities. -Spraying the lava with water to cool it down. -Setting off explosives to divert the lava flow. -Digging ditches, to divert the flow away from areas at risk.
Immediate responses	-Social networking organisations such as Twitter and Facebook spread messages and pleas to send help. –The American Red Cross set a record for mobile donations, raising \$7 million in 24 hours when they allowed people to send \$10 donations by text message.	Plate margins/ boundaries			
Long term Responses	-The British Government in funding 192 doctors, 576 nurses, and 200 support staff to set up 16 major cholera treatment units. –DFID (Department For International Development) contributing £2000000 to reduce Haiti’s vulnerability to future natural disasters.	Constructive		-Occurs when tectonic plates move apart from each other. 1) The upper part of the mantle melts and the hot molten magma rises. 2) As the tectonic plates move away from each other, the molten magma rises in between and cool down to form a solid rock (forms part of oceanic plate). 3) Much of the magma never reaches the surface, but it is buoyant enough to push up the crust at a constructive margin to form ridge/ rift features. 4) In a few places the magma erupts on to the surface producing a lava that is runny, and spreads out before solidifying. Over many eruptions a volcano has a wide base and gentle slopes – called a ‘ Shield volcano ’	

Reasons why people live in areas at risk from tectonic hazards		Destructive/ Convergent		Conservative	
Family, friends and feelings	-People do not wish to leave as their friends and family are there. It is often cheaper and easier to stay, especially when the risks may not be perceived as dangerous enough/ residents are in denial that a disaster may occur.	-Occurs when tectonic plates move towards each other and collide. The effect this has depends on what kinds of plates are colliding. - 2 continental plates = both buoyant so can’t sink into mantle. Compression forces plates to collide and form fold mountains. - Oceanic + Continental plate = oceanic plate is denser so is subducted and sinks under continental plate and into Earth’s mantle where it is recycled. Earthquakes, fold mountains and volcanoes occur. (Composite volcanoes occur at destructive boundaries).		Occurs when tectonic plates move parallel to each other. Can move side by side in the same direction but at different speeds, OR in the opposite direction to one another. – Earthquakes caused by pressure build up, no volcanoes formed as no gap present between the tectonic plates for magma to rise and fill.	
Tourism	-Tourism generates revenue, which benefits the locals and the countries they are in – more than 100 million people visit volcanic sights every year, for the spectacular and unique views, hot springs, the sense of danger etc.				
Geothermal Energy	-In volcanically active areas, geothermal energy is a major source of electrical power. Steam is heated by hot magma in permeable rock, then boreholes are drilled into the rock to harness the super-heated steam to turn turbines at power stations. It is renewable energy, so reduces greenhouse gases (positive effect on climate change).				
Farming	-Lava and ash erupting from volcanoes kills livestock and destroys crops and vegetation. After thousands of years the weathering of this lava releases minerals and leaves behind extremely fertile soil rich in nutrients. Land can farmed productively in these areas, to provide a source of food and income. Volcanic soils are found on less than 1% of the Earth’s surface, but support 10% of the world’s population.				

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