Why do people live near volcanoes?

Minerals Magna rising from deep inside the earth contains a range of minerals. As the rock cools, minerals are precipitated out. This means that minerals such as tin, silver, gold, copper and even diamonds can be found in volcanic rocks. Most of the metallic minerals mined around the world, particularly copper, gold, silver, lead and zinc are associated with rocks found deep below extinct volcanoes. This makes the areas ideal for both large scale commercial mining and smaller scale local activities by individuals and small groups of locals. Active and dormant volcanoes have the same mineralisation, so like extinct volcanoes, they are rich sources of minerals.

Geothermal Energy Geothermal energy means heat energy from the earth. It's unusual to use the heat directly, by building your house on top of a steam vent for example, because it's unpredictable, dangerous and messy. The heat from underground steam is used to drive turbines and produce electricity, or to heat water supplies that are then used to provide household heating and hot water. Where steam doesn't naturally occur it is possible to drill several deep holes into very hot rocks, pump cool water down one hole and extract steam from another hole close by. Countries such as Iceland make extensive use of geothermal power, with approximately two thirds of Iceland's electricity coming from steam powered turbines.

Fertile Soils Volcanic rocks are rich in minerals, but when the rocks are fresh the minerals are not available to plants. The rocks need thousands of years to become weathered and broken down before they form rich soils. When they do become soils though, they form some of the richest ones on the planet. Places such as the African Rift Valley, Mt Elgon in Uganda, and the slopes of Vesuvius in Italy all have productive soils thanks to the breaking down of volcanic rocks and ash.

Tourism Volcanoes attract millions of visitors every year, for different reasons. As an example of the wilder side of nature, there are few things that can beat seeing an erupting volcano blowing red hot ash and rock thousands of feet into the air. Even the less active ones that are just puffing out steam and smoke are impressive sights and attract tourists from around the world. Around the volcano may be warm bathing lakes, hot springs, bubbling mud pools and steam vents. Geysers are always popular tourist attractions, such as Old Faithful in the Yellowstone National Park, USA. Iceland markets itself as a land of fire and ice, attracting tourists with a mix of volcanoes and glaciers, often both in the same place. Tourism creates jobs in shops, restaurants, hotels and tourist centres / national parks. Locals economies can profit from volcanism throughout the year, whereas skiing, for example, has only a limited winter season.

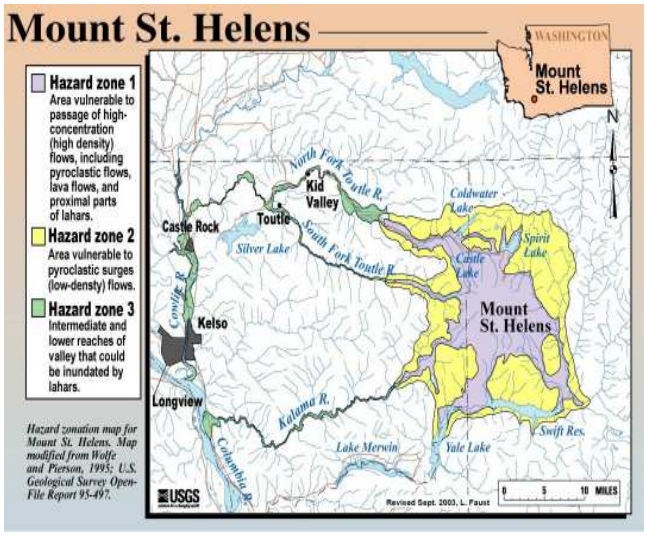
BENEFITS OF VOLCANOES

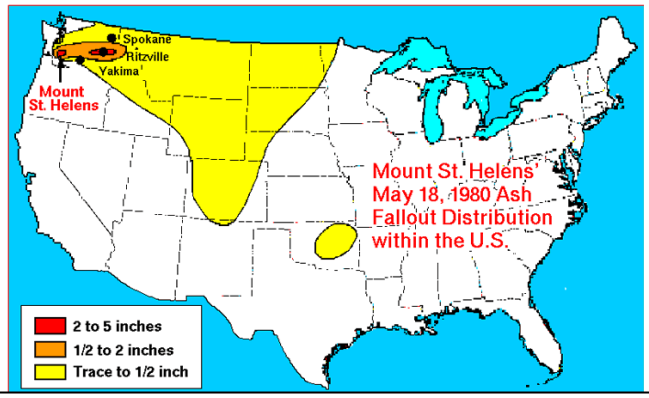
Predicting volcanoes, risk analysis maps and isopachyte maps

Historical and geological records
The rocks and sediments produced by previous eruptions can give an indication of how often and with what explosivity a volcano may erupt. Deposits, lava or ash can be dated to show the eruptive hsitory of a volcano. This can be aided by the plate setting of a volcano, those at destructive boundaries erupting infrequently but with great force, whereas those at hot spots and constructive boudaries may erupty continuously and effusively.
Changes in ground level

Changes in gas composition and volumes
An increase in the emission of Carbon Dioxide and Sulphur Dioxide can be used to predict an eruption. An increase in the volume of gas emissions indicates that magma is rising. A sudden reduction in gas emissions may also mean an explosive eruption is imminent as a volcano that is not de-gassing may be about to erupt explosively.

Precursor seismic activity
As magma rises it causes earthquakes qhich can be located by a network of seismometers. The location, frequency and magnitude of the earthquakes can indicate how clsoe the rising magma is to the surface and how soon the eruption may take place. Some geologista have recognised harmonic seismic activity of magme rising in the volcano vent just before and eruption.





Isopachyte map to show the depth of ash or pyroclsatic deposits after an eruption. The distance travelled by material, the direction and depth are determined by the type of eruption (explosivity), the size of the material ejected and the wind direction and strength.