

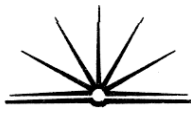
The interactions between the biosphere, lithosphere, hydrosphere and atmosphere are all responsible for forming the diverse functioning and existence of ecosystems such as alpine ecosystems of the Annapurna Mountains in Nepal and rainforest of Mt. Kiera in New South Wales near Woobongong. In the Alpine ecosystem, biophysical interactions include the dynamics of weather and climate, hydrological and geomorphic processes as well as responses to the large natural stresses these cause. The Mount Kiera rainforest also displays many diverse biophysical interactions through, nutrient cycling, energy flows, aspects, winds and rainfall, all of which will be explained.

The first area to be considered is the dynamics of weather and climate and hydrologic and geomorphic processes in Alpine ecosystems such as Nepal. These



ecosystems exist in very cold climates and at high altitudes. Snow is the ^{a very} ~~most~~ common form of precipitation and the area experiences cold, high speed winds on frequent occasions. Hydrologic processes mainly include this precipitation but also, melting of snow in spring results in large flows of water down from these mountain areas, an interaction between the hydrosphere and lithosphere. ~~The~~ Such interaction are also evident in geomorphic processes. Lithospheres of the ecosystems are typified by steep slopes and very thin soils. Interaction with the hydrosphere can easily cause mass movement and erosion. The atmosphere in the form of high winds is even capable of causing erosion of the lithosphere. These biophysical interactions are responsible for forming the shape and continuity of these diverse ecosystems.

Biophysical interactions of various parts of



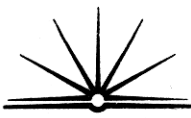
biophysical environment
the ~~biosphere~~ mentioned above with the biosphere also leads to diversity of existence and functioning of alpine ecosystems. This can be widely seen in the responses to natural stresses which exist. The harsh environments caused by the lithosphere, hydrosphere and ~~biosphere~~ atmosphere, cause a very short growing season. Aspect (lithosphere) and cold ~~temperature~~ temperatures, high winds (atmosphere) result in limited resource for plants and animals, (biosphere)

Animals responses include; hibernation, synthesis of red blood cells, low surface area to volume ratios and thick warm coats. Plant are also affected by these interactions and responses include; low ground hugging plants, food storage in cells and ~~resistance~~ to deep root systems for stability and soil resources.

So, it can be seen how biophysical interactions cause diversity and functioning in Alpine ecosystems.



Fieldwork of rainforest ecosystems of Mount Keira has also shown how diversity and functioning of this ecosystem results from biophysical interactions. Nutrient cycling is the first example of this. ~~and involves~~ Nutrients originate from bedrock, they cycle through ecosystems moving through producers and consumers and back to soils where decomposers recycle them. This occurs at a rapid rate in ecosystems rainforests such as Mt. Keira, illustrated by a very thin leaf litter. The flow of energy up trophic level of the rainforest ecosystem also results from ~~the~~ interactions between various organisms of the biosphere. Rainforests are characterised by moisture holding soils. The clayey soils of Mount Keira have formed from the Narrabeen Shales and is an example of interaction between the lithosphere and biosphere. The south-east aspect of the rainforest location on Mt. Keira also



Show interaction between the lithosphere and atmosphere. The ecosystem is protected from dry westerly and north-westerly breezes. Precipitation is also high in rainforest ecosystems. This occurs at Mt. Kiera because the lithosphere, hydrosphere ~~at~~ and atmosphere interact to form ~~the~~ orographic precipitation. Thus, the diversity and functioning of the rainforest ecosystem at Mt. Kiera can be seen.

In conclusion, it has been shown that interactions between the lithosphere, atmosphere, hydrosphere and biosphere cause diversity and functioning of ecosystems. Dynamics of weather and climate, hydrologic and geomorphic processes and responses to natural stress display this in Alpine ecosystems. And, interactions in rainforest ecosystems are shown with, nutrient cycling, energy flow, soils, wind and precipitation.