

Paper Number: 2071

The Supersphere Characters: Children's Books (up to 5 years) Promoting Geoscience and Environmental Education

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To raise awareness and provide basic knowledge about the environment, a children's book has been created to explain, in a simplified language and illustrated with cartoon characters, the basic processes involved in the formation of the Earth, the origin of the universe, the planets and the moon, volcanism, rock formations and water, the earliest life forms and their evolution and the major components of the Earth system. These phenomena are represented through the main characters who are designated **Superspheres** (Fig. 1a) which are super heroes such as **Hydrosphere** (water), **Lithosphere** (rocks), **Atmosphere** (air), and **Biosphere** (e.g., a stromatolite (Fig. 1b) and the biomineral dolomite) (Fig. 1c). These Superspheres characterize the 4 components of the Earth System, plus the **Pyrosphere** (fire), which supplies the energy to drive the Earth System through volcanic activity. Each character has developed super powers that evolved over geological time as they are transformed with time. They are the basic elements of nature and appear in a specific chronological order.

With the emergence of ancient life in the seas, the **Biosphere** begins to use the energy of the sun through photosynthetic activity to produce the oxygen for the **Atmosphere** and create stromatolites, one of the friends of the super heroes. Over a vast period of time, the evolution of life continues with the formation of the supercontinent Gondwana. With the arrival of humans and their interaction with the Earth, a villain appears in the story as the "*Homo incorrectus*" (incorrect humans) (Fig. 1d), who abuses and tries to destroy the super heroes. The importance of these characters for the living Earth is emphasized, creating a connection between children and the characters. The aim of the story is to create a greater ecological consciousness in the children and show them that they should be helping to save the "Superspheres", who are in danger and need to be preserved. Projects for primary schools in the State of Rio de Janeiro have been designed and implemented around these characters, focusing on the rescue of each of these "Superspheres" and their importance for the local geological and archaeological (e.g., shell middens) heritage of the region.

This children`s book was designed as part of an educational project sponsored by the State of Rio de Janeiro, the Brazilian national oil company (Petrobras) and the ETH Zürich in conjunction with the development of the Geopark “Costões and Lagunas of Rio de Janeiro”. The ultimate goal of the project was to promote awareness of the natural environment to the local community and preserve its traditional heritage.



Figure 1: a. Four Superspheres b. Stromatolite c. Dolomite d. Homo incorrectus

