

Ecospheres Project

Report

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Campaigning for the Earth - Searching for other earths



The Ecospheres Project is a collaboration led by Dr. Martin Heath (left), UK (geology and ecology), and Dr. Laurance Doyle (right), USA (astrophysics). We have two principle objectives. The first is to apply knowledge of the Earth to explore the opportunities for habitable planets in our Galaxy. The second is complementary, namely to campaign for responsible stewardship of our home planet.

Habitable worlds – a new study.

We have been taking forwards the initiative launched by Laurance Doyle, in 1994, when he staged the NASA-sponsored First International Conference on Circumstellar Habitable Zones. Since then, most researchers have followed one of two paths. NASA's Astrobiology Institute has been concerned mostly with bacterial-grade life, whilst the SETI Institute (to which Doyle is affiliated) has focussed mainly on the prospects for detecting other civilisations emitting radio signals. Martin Heath has been exploring another avenue, namely planetary environments suitable for ecosystems with complex life. Collaborating over a period of years, we have undertaken a systematic re-examination of models for habitability, and during the final quarter of 2012, we will be working to condense our conclusions into a book and research papers.

This work grows in relevance as NASA's Kepler mission (to which Doyle is attached as a participating scientist) comes closer, day by day, to the goal of finding Earth-sized bodies within the classical Habitable Zone around Sun-like stars. Of key interest to us has been the distinction between Earth-sized bodies and truly Earth-like bodies.

The Earth Campaign.

The impact of human activity on the global environment is escalating. Many campaigning bodies are challenging governments about the danger of doing too little, too late to avert ecological crisis.

We recognise that we have a social responsibility to add our voices to those already encouraging thoughtful stewardship of our home planet. Our contribution is to highlight an important aspect of the problem that has so far received minor emphasis, namely that intensive programmes of research into Earth systems and human interactions with them will be integral to responsible planetary stewardship.

We are not saying that we need further research to confirm the reality of environmental degradation. It is undeniable. It is taking place on a broad front on all scales from the local to the global. In the absence of adequate research, however, there is a danger that when governments do take counter-measures to combat environmental problems that they may blunder through a succession of ill-conceived (possibly last minute) counter-measures, and create a worse crisis than that faced already. The human impact on planet Earth must be monitored closely, and the better our understanding of the Earth, the more effective will be responses devised to ensure the welfare of communities around the world. Disturbingly, major governments are neglecting relevant and essential areas of research. Research is not a luxury that we must forego in times of austerity; it is one of civilisation's fundamental survival tools. We have outlined our case in the first *Earth Campaign Bulletin* (September, 2012) and invite scientists, planners and the corporate world to explore with us how we might take this Campaign forwards.

Outreach.

During August, we launched a *Prime Meridian* newsletter which develops the multi-disciplinary approach to public outreach behind our 2010 *Earth & Sky* free public course. Local environment and its issues are presented in a global context and the Earth from an astronomical perspective.

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