

MYRES-I: Behind the Scenes of an Ongoing Program to Unite Young Solid Earth Researchers

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Original version as submitted to *EOS Trans. AGU*, November 4, 2004. After two revisions, we got: *EOS Trans. AGU*, 86, 5, 48, 2005.

MYRES-I, the first Meeting of Young Researchers in the Earth Sciences was held August 12-15, 2004 in cloudy La Jolla. MYRES-I was a workshop, focused on “Heat, Helium, Hotspots, and Whole Mantle Convection”. But in its Manifesto, published in this space (*EOS Trans. AGU*, 85, 16, 160, 2004), MYRES promised to be more than just another meeting: it would be “an interdisciplinary, international, open, and unbiased community of colleagues who interact regularly to informally exchange ideas, data, and tools, and formulate new collaborative research project”.

It is time to take stock, in the interest of maximum democratic transparency — certainly. But this will also be a call for proposals. MYRES, in order to survive as a funded project, will need two new meeting chairs, who will take it upon themselves to write the MYRES-II proposal. This should include a new overarching theme, a new venue (preferably outside of North America), and above all, the same enthusiasm for the concept that made MYRES-I an undeniable success.

Did we “limit your own evaluations to wiggles within the confinement of conventional wisdom”, as one controversial geologist forewarned? Was the Y in MYRES, which in our interpretation stood for “in the budding stage of their careers”, an invitation to hold a “Meeting for the Weaklings”, as one influential geochemist claimed? The undersigned, members of MYRES’ first steering committee, don’t think so.

Our National Science Foundation, European Science Foundation, and Scripps Institution of Oceanography funding enabled us to attract and nearly fully fund a diverse and international crowd of close to 100 participants, from an oversubscribed pool of junior applicants. Convening on the U.C.S.D. campus, they were treated to a selection of – we deem – unusual keynote lectures. These were peer-reviewed and fully referenced before going on the air, to maintain their coordinated focus of introducing subfields of the Earth Sciences to the others — in a friendly way (though not for dummies), of exposing pitfalls and misconceptions, and of posing looming science questions, which the audience, with their careers ahead of them rather than behind them, would be poised to tackle and solve.

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The problems of heat transport in the Earth, the style of mantle convection and the existence of geochemical reservoirs are interlinked and require interdisciplinary solution strategies. Regarding mantle structure first, the discourse focused on “Seismic Tomography: Art or Science?”. If the answer was “a little bit of both”, attendees were taught how to judge for themselves by asking the right questions. In the same vein, “How to Interpret Geophysical Data for Mantle Dynamics” discussed the sources of error in measuring, and subsequently converting mineral physics data to other geophysical observables. “Constraints on Mantle Structure from Surface Observables” provided tools to “build mantle structure at home”, using satellite gravity data and observations of post-glacial rebound. These were explained alongside their trade-offs, non-uniqueness, and the influence of a priori assumptions. “Geochemical Observables on the Composition of the Earth and its Reservoirs” were introduced, from the Bulk Silicate Earth to the size and distribution of reservoirs. Again, this was a gift that keeps on giving. The attendees were told they, too, could become “armchair geochemists” by using the extensive databases, which are now becoming online — but caution! Mass balance is ignorant about the topology of the reservoirs. In “Noble Gas Constraints on Mantle Structure and Convection” we were told, among other things, which of the noble gas isotopes were primordial, and left with the ability to interpret aptly called “wormograms”. If only to identify problems and paradoxes in such complex data sets. Core mysteries were up next in “Heat and Mass Flux: The Role of the Core”, highlighting its possible content of radioactive elements, its uncertain age and temperature profile. A thorough treatment of “Seismic Constraints of Boundary Layers”, revealed how (well) these can be measured by advocating the use of seismic arrays — clearly an area of funding growth in seismology. To conclude, “Dynamics of Thermal Boundary Layers and Convective Upwellings” asked, among others, the question as to how many plumes one would actually expect in a convective mantle. It concluded with a note on how theorists and experimentalists should focus less on making each other trip up, but attempt to help each other out when the going gets tough.

In the same wholesome spirit (not giving a fish, but teaching how to fish), informal discussions focused on addressing concerns not usually discussed at scientific meetings. “How uncertain is your model?”, “I’m a mineral physicist, what do you want me to do for you?”, “Here’s how you can tell a geochemist sweeps something under the rug”, “Which types of waves resolve different mantle structure, and on what scale?”, “Can we set up an online database to freely share our data?”, “What the hell is a red spectrum?” These are not statements or questions commonly heard elsewhere — at least not with a straightforward answer following.

Thus, a good educational time was had by all. Certainly, perhaps a small number of vocal participants will tend to dominate any gathering of adults — if we couldn’t change this rule, we certainly succeeded in changing those voices. Our sponsors will be pleased that our anonymous exit questionnaire received good marks throughout. Receiving an average of more than 4/5 satisfied were “This conference serves a unique purpose not met by other available meetings”, “I felt more comfortable speaking out than at other meetings I have attended”, “The lecturers were knowledgeable and well-chosen”, “I understand constraints from other disciplines for my own research better” — to name just a few. MYRES must be on the right track, if, out of 35 questions, the lowest (but still passing) grades, with some distance, were due to “food quality” and “not enough play time”.

As a community, in-between meetings, we are moving online (at www.myres.org). A complete website is maintained with all lecture notes, exit survey results, and the sedimented commentary from the break-out and forum sessions — and an occasional haiku. An online glossary of terms all of us should know about each other's research fields is in the planning stage. Also present and growing online are perhaps the most tangible results of the MYRES effort: nascent "proposals" by spontaneous groupings of young scientists. From the culinary, "Testing the mantle's plum pudding model", to the prosaic, "Improving scaling between seismic velocities and thermal/compositional anomalies". From the exhaustive, "What is the source, style, and magnitude of heat transfer through the lower mantle?", to the lapidary, "Constraining the geotherm". Watch this space.

We wish to give birth to MYRES-II and call for proposals. With the undersigned nine people on the steering committee, including both MYRES-I meeting chairs, our plan is to reduce this number to an even eight members. From the next installment, MYRES-N, on, two such members will be the past, and two the current meeting chairs. With every iteration, four members that have not been meeting chairs shall be voted to stay on board for an additional year, and a team of two meeting chairs organizing the next meeting (this involves writing one or two proposals to the respective science foundations) shall be voted in.

It has not escaped our notice that the practice of voting people off the island of MYRES will ring with the young crowd, and what's more, everybody can be a contestant! To receive applications to be the next meeting chairs, two Town Hall Meetings are planned, one at the upcoming AGU's Fall Meeting (on Thursday, December 16, 2004, at 6:30, 3rd level of Moscone West) and another one at EGU's Spring Meeting in Vienna (April 24-29, 2005). By the latter time, this steering committee would like to have received, and made available to the public, meeting-chair proposal outlines such that a plenary vote can be organized shortly after that.

Uniting, not dividing, MYRES-I was a success. With your help, let's add a few more Roman numerals, beyond MYRES-II.