IRIS DMC's Latest Data Products

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The IRIS Data Management Center (DMC) has been serving the seismological research community with higher level, beyond raw data, products since 2009. We are currently hosting 28 distinct data products for open use by the research community, educators and beyond. In this presentation we will highlight 4 new developments as follows:

The DMC's Earth Model Collaboration (EMC) currently hosts more than 70 contributed Earth models. In addition to our browser-based visualization tools, we also offer a set of plugins for 3D desktop visualization using ParaView. The plugins are customizable to allow users to visualize their own Earth models or auxiliary data in 3D. In the near future, programmatic access to EMC models, selected subsets, and information will be available through EMC Web services. With availability of such service, we anticipate a new generation of tools that display models or perform calculations based on models to be developed.

 The Exotic Seismic Events Catalog (ESEC*) provides information on non-earthquake seismic events such as landslides, debris flows, dam collapses, etc. that generate seismic signals but are rarely included in earthquake catalogs.
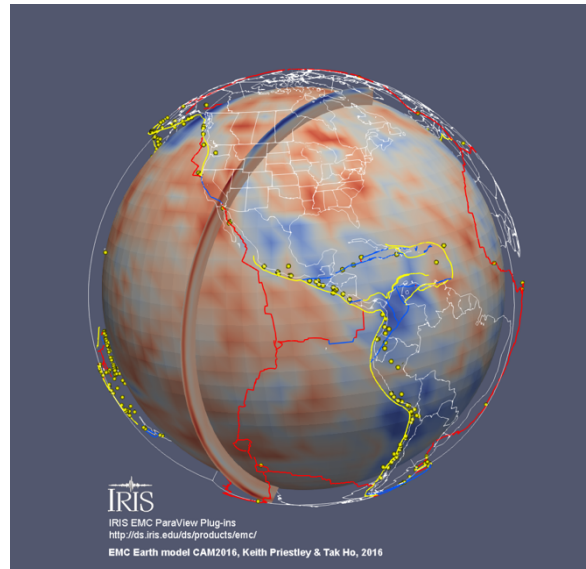
The Surface-Wave Radiation Patterns (SWRP**) is our latest event-based data product. Following major earthquakes, radiation patterns at a set of frequencies are generated and made available from our product repository. The SWRP product also provides an interactive web-based application to generate radiation patterns for arbitrary source parameters, allowing users to explore the effect of parameters on the directional dependency of surface waves.

We have also released a **Python package to compute horizontal-to-vertical spectral ratios (HVSR)** using available power spectral density (PSD) estimates of ambient noise available from the DMC's quality assurance system to provide a quick insight into the frequency-dependent characteristics of the many three-component seismic stations available from IRIS.

EMC-ParaView Plug-ins display for CAM2016, a global upper mantle surface wave tomography model by Keith Priestley and Tak Ho, 2016. The image displays dVsvr, perturbation of the vertical component shear wave speed w/t reference model (rmod), at the depth of 500 km. Coastline, plate boundaries earthquake locations and a vertical slice of the model are also displayed.

Event-based Surface-Wave Radiation Patterns plots at six frequencies based on the source mechanism provided by the Global CMT for the Mw 6.9 earthquake of August 2, 2019 in southwest of Sumatra, Indonesia.

Contributions to EMC repository and ESEC catalog are strongly encouraged, and instructions are available for model creators who wish to share their published models via EMC (http://ds.iris.edu/ds/products/emc-contributionguide/) and those who would like to become a contributor to ESEC catalog (http://ds.iris.edu/ds/products/esec-contribution-guide/).
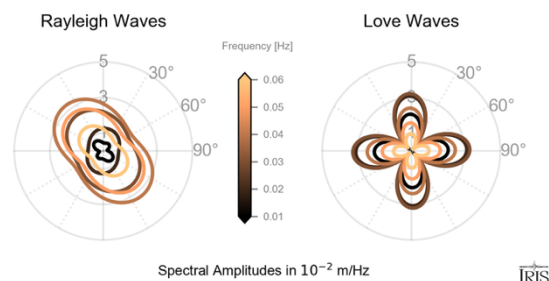
* ESEC: made possible by contributions from Kate Allstadt (USGS) and Steve Malone (PNSN)
** SWRP: developed by Boris Rösler and Suzan van der Lee (Northwestern University)