



AWSFL008-DS3

**NSF Award Abstract**  
**- #0405641**

**US and Japanese Collaborative Research: A  
Magnetotelluric (MT) Transect Across  
the Mariana Subduction Factory**

**NSF Org** OCE

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**Award Instrument** Standard Grant

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SCIENCES  
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**NSF Program** 5720 OCEAN DRILLING  
PROGRAM

**Field Application** 0204000 Oceanography

**Program Reference Code 0000,OTHR,**

## **Abstract**

The PIs will conduct a deep-probing magnetotelluric (MT) Experiment across the Mariana arc, to quantify the electrical conductivity across the subduction system, from oceanic lithosphere, into the trench, across the island-arc and through the back-arc, to address issues of water release into the mantle wedge and melting processes resulting from hydration and back-arc spreading. This study is in collaboration with Japanese colleagues; the US instruments will be placed on the Pacific plate to the east of the Mariana, in the fore-arc basin and across the West Mariana Ridge. This seafloor transect will be in the middle of the system where deep structure should be maximally two-dimensional. The study will measure a 2-D electrical resistivity section across the system from depths of about 20km to 200km below the seafloor. The transect will be coincident with that of the independently funded and mobilized seismic experiment, collecting wide-angle reflection and refraction data, as well as local and teleseismic earthquake arrivals to constrain crust and mantle velocity and attenuation structure beneath the system

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