**Project Details**

ROSES ID: NRA-00-OSS-01  
Selection Year: 2001  
Program Element: Independent Investigation: LWS  

**Project Title:**  
Seismic Forecasting of Solar Activity  

**PI Name:** Douglas C. Braun  
**PI Email:** dbraun@cora.nwra.com  
**Affiliation:** NorthWest Research Associates, Inc.  

**Summary:**  
We propose to use standard techniques in phase-coherent seismic imaging to develop the capability for real-time monitoring of the deep solar interior and far side for space-weather forecasting applications. The advent of far-side solar imaging now opens the way for a quick, comprehensive and inexpensive synoptic monitor of large active regions anywhere on the solar surface. We will develop a flexible, portable software package for this utility. In the first year of the project we will implement a working demonstration of our ability to predict the appearance of large active regions from behind the solar limb up to a week in advance, using available SOHO-MDI observations. The ability to predict the emergence of solar activity from directly beneath the solar surface will also have immediate applications to space-weather forecasting. We will conduct a careful study to assess subsurface seismic Doppler and wave-speed perturbations as possible precursors to near-side active-region emergence. We will also extend our near-surface investigation to low spherical-harmonic degrees to probe for signatures of prospective surface activity deep in the convection zone. Finally, we will explore both forward and inverse holographic models in terms of subsurface sound-speed and Doppler variations that would give rise to the observed signatures.

**Publication References:**

**Summary:** no summary  