

## **Solar Cycle Activity Related to Local and Global Helioseismology**

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The solar activity cycle is thought to arise from dynamo processes occurring in the solar interior below the visible photosphere. The only observational method we currently have that can probe the interior is that of helioseismology, the study of the resonant acoustic-gravity waves trapped inside the Sun. Helioseismology is particularly suited for detecting the motions of the plasma inside the Sun, which is useful in this context since a dynamo is a system of plasma flows that generate a self-sustaining large-scale magnetic field. We now have more than 22 years of high-quality consistent helioseismology data from GONG, SOHO, and SDO; these data are showing that the internal flows are generally more complex than is assumed by dynamo theories. In this talk I will review the current state of knowledge about the zonal (east-west) and meridional (north-south) components of the flow as obtained from global and local helioseismology, and discuss how the temporal evolution of these flows is related to future activity cycles. I will also touch on the solar-cycle related changes in the Sun's global acoustic spectrum and associated evidence for the existence of a second dynamo process.