

Suggested HS Working Groups

- **Rudi Komm, Junwei Zhao, Kiran Jain, Sylvain Korzennik, Johann Reiter, Ed Rhodes, Sushant Tripathy:** *Reconcile flow results from different local and global helioseismic techniques*
 - Derive big-ring flow maps from GONG and compare with HMI flow maps.
 - Compare time-distance with ring-diagram HMI synoptic flow maps and HMI and GONG ring-diagram flow maps and establish similarities and differences. Progress is expected within the first year.
 - Revisit Center-to-Limb correction for HMI and GONG ring-diagram flows.
 - Measure and compare local and global flow maps throughout NSSL.
 - (Builds on **HS-WG1** of Phase I)
 - **Complementary to SL-WG2.**
 - **NSSL** Theme

Suggested HS Working Groups

- **Charles Baldner, Sylvain Korzennik, Sarbani Basu, Alexander Kosovichev, Johann Reiter, Ed Rhodes:** *Rotation & structure using global helioseismology*
 - Testing how random noise limits detecting the tachocline properties (position, thickness and variation with latitude).
 - Tease out the signature of tachocline position and thickness variations.
 - Rotation and structure closer to the surface ($r > 0.99R_{\odot}$) with $\ell > 300$.
 - (Builds on **HS-WG2** & **HS-WG3** of Phase I)
 - **Tachocline** and **NSSL** Theme

Suggested HS Working Groups

- **Ruizhu Chen, Junwei Zhao, Shukur Kholikov, S.P. Rajaguru, Matthias Waidele**: *Center-to-Limb effect & other systematics*
 - Understand the systematics (Center-to-Limb, CtoL) as well as HMI-specific ones in time-distance helioseismic measurements of the deep interior — both for meridional circulation and rotation and their temporal variations. Progress is expected in this sub-milestone within the first year. Key diagnostics involve frequency dependence of CtoL, and surface magnetic field related flows and systematics. Findings here will also contribute to understanding the dynamics of the NSSL.
 - Use time-distance helioseismology to measure the rotation axis alignment down to the tachocline — this will involve constraining the Carrington Elements that determine the solar rotation axis and hence measuring the influence of variations in solar P and B0 angles.
 - (Builds on **HS-WG4** of Phase I)
 - **Tachocline**, **FT&E**, and **NSSL** Theme

Suggested HS Working Groups

- **Jason Jackiewicz, Doug Braun, Shea Hess Webber, Alexander Kosovichev, Matthias Rempel, Andrey Stejko:** *Technique validation with models*
 - Validate local helioseismic techniques with large-box models and model flows to derive near-surface flows and flows under active regions.
 - (New in Phase II)
 - **FT&E** and **NSSL** Theme

Suggested HS Working Groups

- **Junwei Zhao, Ruizhu Chen, Tom Duvall, Jason Jackiewicz, Shukur Kholikov, S.P. Rajaguru, Matthias Waidele:** *Extend the HMI Time Distance pipeline flows to deeper layers*
 - Extend the HMI Time-Distance pipeline to produce flows in layers as deep as about 50 Mm.
 - Develop new codes for TD measurements, including Center-to-Limb removal and inversions.
 - Complementary to **HS-WG1** and **HS-WG3**.
 - (New in Phase II)
 - **FT&E** and **NSSL Theme**

Potential Working Groups

- **R Mausumi Dikpati, Tom Duvall, Alexander Kosovichev, Matthias Waidele: *Rossby waves***
 - Could be **Dynamo WG** with participating **Helioseismology** Team members.
 - (New in Phase II)
 - Not Theme specific

Potential Working Groups

- **Rudi Komm, Alexander Kosovichev, Junwei Zhao:** *Subsurface Flows near long-lived activity complexes*
 - Flows associated with activity nests and active longitudes and supergranules.
 - (This topic is in the proposal, but we have not discussed it yet.)
 - **FT&E** Theme

Suggested HS Working Groups

	Tachocline	FT&E	NSSL
HS-WG1			X
HS-WG2	X		X
HS-WG3	X	X	X
HS-WG4		X	X
HS-WG5		X	X