

# EarthScope Mendocino Triple Junction Observatory (MTJO) Synthesis Workshop

October 19 - 23 2016

Trinidad, CA

*Final Report - Prepared by Kevin P Furlong (PSU) and Mark Hemphill-Haley (HSU)*



*Mendocino Triple Junction above Singley Flat*

This EarthScope Synthesis Workshop had the goal of reviewing our current knowledge about the Mendocino Triple Junction (MTJ) region and the adjacent Northern San Andreas system and Southern Cascadia plate boundaries. The workshop structure was designed to provide an opportunity for participants to be brought up to date on relevant research, engage in useful discussions, and potentially generate new research ideas. In particular a goal was to explore the new science possible in the transition region between Cascadia subduction and San Andreas translation. Additionally, exploring the potential for this transition region to serve as a focused study and education site was a target for the workshop.

The workshop involved approximately 16-20 people (several local experts from Humboldt State University participated for various parts of the workshop), and included representatives of universities, USGS, senior scientists and early career scientists.

To facilitate continuing discussions, housing was arranged at several houses in Trinidad (walking distance), nearby to the Marine Lab (where the Friday/Saturday sessions will be held). We had several group dinners and continued informal evening discussions at one of the rental homes, which had a large living room ideal for such a purpose.

The workshop was informal and we hope informative. As detailed below, we had a mix of oral and poster presentations (both overview and specific), a generous amount time scheduled for discussions, and the workshop was kicked-off with a 1-day field trip to several sites associated with the MTJ region.

### ***The schedule for the Workshop was:***

19 October 2017 (Wednesday) - Participant arrival at Trinidad, CA

20 October 2017 (Thursday) - Field Trip (organized and led by Harvey Kelsey)

- 21 October 2017 (Friday) - Morning Session: Introduction/Goals/Logistics; Overview Presentations  
Afternoon Session: Discussions/Informal Presentations [Cascadia, San Andreas]
- 22 October 2017 (Saturday) - Morning Session: Recap; Discussions/Informal Presentations [MTJ]  
Afternoon Session: Synthesis Session (breakout groups, discussions)
- 23 October 2017 (Sunday) - Participant departure

### ***Events and Outcomes***

#### ***Field Trip***

The workshop began with a day-long field trip to the MTJ region. This served several important roles in facilitating the goals of the workshop:

- (1) It allowed the participants to meet and interact in an informal environment, prior to meeting for presentations and discussions
- (2) Most participants were experts in either the tectonics of Cascadia or the San Andreas, but few had worked on or were familiar with the transition between these two major plate boundary systems; the field trip helped to start the exchange of knowledge amongst the participants
- (3) The possibilities for the MTJ region to serve as a MTJ Observatory (MTJO) was able to be introduced in the field setting where sites, access and examples were clear.

Three main sites were visited during the field trip:

- (a) Little Salmon Fault - an onshore extension of one of the accretionary margins active faults [Cascadia]
- (b) Van Duzen River - northern limit of incipient San Andreas related faulting [San Andreas]
- (c) Singley Flat - Mattole Road - site at the MTJ transition zone [Photo Above]

These sites served as ideal locations for sustained discussions of processes and linkages, and directly led to follow-on discussion over the next two days.

#### ***Presentations and Discussions***

A series of presentations and extended discussions took place over the next two days at the HSU Marine Lab. These were informal, encouraged to provide discussions and both provide background for participants less familiar with the system and propose major questions and/or experiments that might advance our understanding. A combination of oral presentations, poster presentations, and extended discussions occurred. Discussions were lively, extended beyond the meeting day to group dinners, and generally served the proposed goals of the workshop. An effort was made to allow all participants an opportunity to present materials, while maintaining substantial discussion time. Early career scientist were encouraged to take on leadership in discussion of future activities. The final half-day of the workshop was focused on brainstorming future activities, and exploring the potential of an MTJO.

## ***Outcomes***

At the conclusion of the workshop the following goals were enumerated:

### *Specific To Do List*

1. Presentation of workshop goals and recommendations at the SSA Annual Meeting in Denver (KPF presented on behalf of the workshop in the Subduction Zone Observatory session)
2. Explore funding opportunities with NSF and other agencies for further workshops etc. (discussions have begun with NSF)

### *Longer Term Outcomes*

1. Strong support for the development of a MTJO (virtual observatory) to serve as both a resource/facilitator for individual and group projects; and developing MTJO as a catalyst for educational activities (including field studies) aimed at enhancing earthquake science education
2. Explore possibilities of large (i.e. NSF IES scale) projects focused on the plate boundary transition from southern Cascadia to the Northern San Andreas. Overall very strong support for such an endeavor.
3. Generating a “white paper” focusing on the earthquake science opportunities for an MTJO regional activity.

### *Postscript:*

Overall the workshop was a success (based on feedback from participants) and much of that success was a result of (a) a group of scientists with common interests but diverse expertise, willing to learn from each other; (b) a small but energetic group of early career scientists who fully participated; (c) initiating the workshop with the field trip accomplished multiple goals and definitely helped catalyze interactions; and (d) flexible and open-ended discussions without an imposed goal of immediately producing a paper or such - that people were sharing their science but not being asked to relinquish their science was critical to open discussions.



*Sunset at Trinidad Head, California*

## *MTJO EarthScope Synthesis Workshop*

### *Organizers:*

*Kevin P. Furlong, Penn State University*

*Mark Hemphill-Haley, Humboldt State University*

### *Participants:*

Wayne Thatcher, USGS

Eileen Hemphill-Haley, HSU

Josh Roering, U Oregon (unable to attend)

Jason Patton, HSU

Kathryn Materna, UC Berkeley [grad student]

Lee Liberty, Boise State

Jeffrey Beeson, Oregon State [grad student]

Douglas Wilson, UCSB

Doug Toomey, U Oregon

Ginger Barth, USGS

Miles Bodmer, U Oregon [grad student]

William Hammond, UNR

Chris Goldfinger, Oregon State (unable to attend))

Tom Brocher, USGS

### *HSU Participants*

Harvey Kelsey [organized and led field trip]

Sue Cashman

Melanie Michalak