



NORTHWEST GEOLOGICAL SOCIETY

A regional association of professionals, students & others interested in geology
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October 2014 Newsletter

Volume 28, Number 6



October 14 Program Speaker

Speaker: Ron Harris, Professor, Geological Sciences, BYU

Title: Australia Down Under: The Active Banda Arc-Australian Continent Collision of Eastern Indonesia and its Consequences

Abstract: The transition from subduction to collision in the Banda arc is documented by the following: 1) isostatic uplift of the arc and forearc, 2) increased coupling of the subduction interface, which causes indentation of, and distribution of strain away from, the thrust front, 3) progressive closure and subduction of forearc basement, 4) progressive continental contamination, decreased activity and uplift of the volcanic arc and 5) increasing numbers of fatalities of those in harms way of mega-thrust earthquakes and tsunamis.

Investigation of these characteristic features of the active Banda arc-continent collision involves diverse methods that track the distribution of strain over a wide range of temporal scales. The methods include structural mapping of the Banda orogenic wedge, constraining the ages and structure of pre- and syn-orogenic rock units, analysis of protoliths and thermo-chronologies of metamorphic rocks, balancing cross-sections across various parts of the orogeny that represent different stages of development, studies of uplifted and warped coral terraces, distribution of seismicity and geodetic measurements.

The results of these studies challenge many of the current ideas about how arc-continent collisions evolve. For example: 1) the NW Australian continental margin subducts to at least a depth of 250 km involving ~ 450 km of shortening, 2) little to no evidence is found for slab tear or subduction polarity reversal; 3) the Banda forearc basement is subducting with the continental slab; 4) much of the orogenic wedge grows by diapirism of shale and metamorphic rocks; 5) the volcanic arc remains active during accretion; and 6) vergence directions of folds and thrust faults differ by at least 90 degrees from plate convergence direction due to boundary conditions imposed by the subducting plate.

Besides revising some of the false notions in textbooks, these discoveries pale in significance to the need for geologists everywhere, of all sub-disciplines, to reach out in communities at home and abroad - to address problems we recognize can benefit from our expertise, particularly the threat of natural disasters to those in harms way.

5:30pm: No-host social hour

6:30pm: Buffet dinner

7:30pm: Speaker program

All are welcome to attend –
reservations are required
if coming for dinner.

► [Reservations here](#)



PROGRAM DINNER RESERVATIONS: NWGS members: **\$40**; Non-members: **\$45**; Full-time students : **\$20**. Add \$5 for LATE REGISTRATION. Make your reservation and payment on-line at www.nwgs.org (or mail your payment to *Northwest Geological Society, 4616 25th Ave NE #397, Seattle, WA. 98105* (must be received by Thursday prior to meeting)). Contact Secretary [Beth Tanner](#) with questions about dinner reservations.

If attending the speaker program only, a \$5 voluntary donation to help defray the meeting room cost is requested.

Location: Pacific Dining Hall at the [Talaris Conference Center](#), 4000 NE 41st St., Seattle, WA., 98105. **Directions:** See [on-line directions with map](#), or: from I-5 northbound or southbound in Seattle, take Exit 168B (NE 45th St.). Drive east on NE 45th St. past UW down the hill and past University Village. Turn south (right) onto Mary Gates Memorial Drive at the 5-way intersection. MGM Drive will curve east (left) and become NE 41st St. Continue several blocks to the [Talaris Conference Center](#) entrance on the north (left) side. We meet in the Pacific Dining room on the left.

Upcoming Speakers and Field Trips

November 11: TBA (please see the announcements on the next page).

December 9: TBA.

January 13: TBA

February 10: TBA

March 10: TBA

If you would like to volunteer to give a talk or lead a field trip for NWGS, please contact President Elect [Grace Winer](#).

Please see the [NWGS website](#) for detailed announcements.

Contact webmaster [Julie Masura](#) if you have any announcements to post on the website.

- President [Grace Winer](#) says she has a full compliment of exciting speakers lined up for the upcoming meeting year! Watch for names in the *Upcoming Speakers and Field Trips* section of the newsletter when speakers have committed to specific dates.
- **Field guides** from recent NWGS field trips are now becoming available. Please check the NWGS [Field Trip Guides](#) webpage for recent additions.
- Please contact [Grace Winer](#) if you would like to be added to the NWGS Speakers Bureau.
- Next **Board meeting:** TBA, 4:30pm, Talaris Conference Center.

YOU would like to be involved!



Professor Ron Harris with Pramuka (photo submitted by R. Harris).

About NWGS

NWGS, a regional association of professionals, students & other persons interested in **geology**, provides a forum for the presentation and discussion of a wide range of geologic topics, emphasizing those of the Pacific Northwest of fundamental scientific interest.

YOU would like to be involved!

Program meetings: 2nd Tuesdays, October through May in the Pacific Dining Hall at the [Talaris Conference Center](#) in Seattle (see 1st page). Anyone may attend the speaker program, but a reservation is necessary for those wanting dinner (see 1st page). **Field trips (members only):** one in late spring/early summer and one in late summer/early fall, usually of 1-3 days in length. **Membership** is open to anybody with a professional or amateur interest in geology. **Annual dues:** Professional: \$30; Student: \$5. **To join or pay annual dues:** send a check payable to NWGS to Secretary [Beth Tanner](#), 4616 25th Ave NE #397, Seattle, WA. 98105. Please include your name, address, home phone, email, and employer/affiliation (if any). Professional dues may now also be paid at www.nwgs.org.

YOU would like to be involved!

Recommended Readings

Harris, Ron, 2011, The Nature of the Banda Arc-Continent Collision in the Timor Region, In: D. Brown and P.D. Ryan, Arc-Continent Collision, *Frontiers in Earth Sciences*, DOI 10.1007/978-3-540-88558-0_7, Springer-Verlag Berlin Heidelberg, pp. 163-211.

Major, J., Harris, R.A., Chiang, H-W., Shen, C.C., Cox, N., Nelson, S., Prasetyadi, C. and Rianto, A., 2013, Pleistocene hinterland evolution of the active Banda Arc: Surface uplift and neotectonic deformation recorded by coral terraces at Kisar, Indonesia, *Journal of Asian Earth Sciences* 73 (2013) 149-161.

Please send your reading recommendations to Newsletter Editor [Tom Bush](#).

To report a change of email or postal address or request to be removed from mailings, notify Membership Chair [George Bennett](#). Questions or comments? Contact President [Dan Smith](#).

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