LUNAR AND PLANETARY INSTITUTE
3303 NASA ROAD 1 HOUSTON, TEXAS 77058

June 1984

LPI TOPICAL CONFERENCE
FIRST ANNOUNCEMENT

Dear Colleague:

Recent studies of continental terranes (such as the Basin and Range Province) where extensional deformation is dominant have shown that thin-skin tectonics are a common characteristic of this deformation, while low-angle faults (detachments or decollements) separating domains differing greatly in mechanical behavior are a key feature. The common association of volcanism and other thermal phenomena with the extension suggest that the style of at least some of the deformation is thermally controlled. It has also been suggested that mechanical inhomogeneities play a major role in controlling detachment.

The spectacular data obtained from missions to the planets and satellites of the solar system indicate that volcanism and other thermal effects are conspicuous on some of these bodies; the data also show clear evidence of tectonism that in many cases is best explained by decoupling between layers under a regime of extensional stress.

Even though much is known and more is being learned every day about continental extension, much remains to be done to test hypotheses, generate a synthesis, and point out areas of inadequate knowledge. A good way to achieve this aim is to bring together people who can provide field, experimental and theoretical information on the subject in a congenial environment that encourages discussion and exchange of information. A promising approach is to focus on specific mechanisms that are likely to play a major role in controlling the style of continental extension, rather than again examining extension in general. It appears valuable to promote interaction between terrestrial and planetary geologists, on the grounds that the former have abundant and detailed knowledge of a single system, the Earth, whereas the latter have knowledge that is less abundant and detailed, but pertains to a number of different systems. Pooling these resources should yield insights not obtainable from each field of study alone.

The Lunar and Planetary Institute is organizing a conference to explore the role of thermal and mechanical detachment in continental extension on Earth's continents and the crusts of the solar planets. The conference is the third of a highly successful series that has already explored plateau uplift, and processes of planetary rifting.

Preliminary details are spelled out in the enclosed meeting announcement. We would be most grateful if you would post one of the enclosed announcements. Feel free to copy and distribute the announcement to colleagues who might be interested. To be added to the list to receive subsequent mailings for the meeting, please return the attached indication of interest questionnaire, or contact the LPI Projects Office (telephone 713-486-2150), Lunar and Planetary Institute, 3303 NASA Road 1, Houston, Texas, U.S.A. 77058.

Sincerely,

Ivo Lucchitta

Ivo Lucchitta
Program Committee Chairman
U.S. Geological Survey, Flagstaff

**Conference on**

# HEAT AND DETACHMENT IN CRUSTAL EXTENSION ON CONTINENTS AND PLANETS

**PURPOSE:** The conference is aimed at exploring the role of thermal and mechanical crustal decoupling in controlling the tectonic style of extension on terrestrial continents and solar planets, using field and laboratory data as well as modelling considerations.

**WHEN:** October 10–12, 1985

**WHERE:** Sedona, Arizona, U.S.A.

**HOW LONG:** Three days, with an additional day before the conference for optional activities.

**ATTENDANCE:** Limited to 75 people, of whom 40 to 50 are to present papers. (If you wish to attend or want to receive future announcements concerning the conference, return the indication of interest questionnaire to the LPI.)

**FORMAT:** Each session will explore a specific aspect of the problem and include papers that pertain to this aspect. Each session will be introduced by a keynote speaker who will set the stage. There will be no concurrent sessions.

**PUBLICATIONS:** Participants will be expected to furnish 600-word extended abstracts that will be incorporated in an abstracts volume to be issued before the start of the conference. After the conference, full-length papers will be published in a special issue of *Tectonophysics*, if there is enough interest to warrant this step. The two previous conferences have yielded valuable compendia.

**OPTIONAL ACTIVITIES:** The possibilities are these:

a) Overflight across and along the boundary between the craton (Colorado Plateau) and the adjacent Basin and Range Province, including inspection of core-complex terrane and associated detachment and listric faults;

b) Day hike into the Grand Canyon along Tanner trail to the top of the Redwall, where there are spectacular views of the eastern Grand Canyon. The hike is moderately strenuous.

c) Geology of the Verde Valley—day trip.

Please indicate your interest or preference when you respond to the conference announcement.

We would greatly appreciate receiving responses to this announcement at the earliest convenience, but no later than October 1, 1984.

**CO-CONVENERS:**


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