

# FLAWS

## Minutes of the perspective paper workshop

Lisbon, 19<sup>th</sup> - 20<sup>th</sup> February 2018

### Attendants:

Marc-André Gutscher, Pedro Terrinha, João Duarte, Jason Morgan, Dimitris Sakellariou, Luis Batista, Marta Neres, Heiner Villinger, Pierre Henry, Louis Géli, Christian Hensen, Adriano Mazzini, Luis Matias

### *Monday, 19<sup>th</sup> February*

#### Activities:

- Review of the status of the draft version
- Identify missing parts
- Develop a new structure of the manuscript
- Define group of authors
- Split-up in working groups and develop specific input on text and figures

### *Tuesday, 20<sup>th</sup> February*

#### Activities:

- Continue development of new and revised input:
  - Introduction and background sections
  - Regional examples
  - Overview maps
  - Figures and sketches
- New draft version has been compiled

The new draft version will be checked for consistency and re-circulated among the group of authors within the next couple of weeks. Manuscript should be finished in summer 2018.

# FLAWS

## Minutes of the IODP workshops

Lisbon, 21<sup>st</sup> - 22<sup>nd</sup> February 2018

### Attendants:

Marc-André Gutscher, Pedro Terrinha, João Duarte, Jason Morgan, Dimitris Sakellariou, Marta Neres, Heiner Villinger, Pierre Henry, Louis Géli, Christian Hensen, Adriano Mazzini, Alina Polonia, Luca Gasperini, Namik Cagatay, Gunay Cifci, Kadir Eris, Luis Batista, Cecilia McHugh

### **Wednesday, 21<sup>st</sup> February**

Presentations and subsequent discussions:

- Heiner Villinger: General facts on IODP proposals
- Pierre Henry: IODP-drilling in the Sea of Marmara
- Alina Polonia: IODP-drilling in the Ionian Sea
- Pedro Terrinha: IODP-drilling in the Gulf of Cadiz  
(wrap-up of the Barcelona workshop)
- Cecilia Mc Hugh: Marmara pre-proposal history
- Pierre Henry: Stratigraphy and paleoceanography of the Sea of Marmara
- Gunay Cifci: Seismic data from the Marmara and Aegean seas
- Kadir Eris: Turbidite paleoseismology
- Dimitris Sakellariou : Corinth IODP objectives and North Aegean data

### **Thursday, 22<sup>nd</sup> February**

Split-up in working groups with separate discussions on drilling goals and hypotheses:

#### *IODP initiative for the Ionian Sea*

Discussion mainly addressed the geological/tectonic background, state of the art, available data and why it is important to drill in the Ionian Sea.

Compelling ideas/hypothesis to be tested through IODP are related to the occurrence of serpentinite diapirs within the Calabrian Arc subduction complex. Main objectives are to reconstruct timing and triggering mechanisms of diapirism in the subduction complex of the Calabrian Arc.

Drilling the diapiric features will allow addressing a number of different issues mainly related to:

- 1) Diapir composition: serpentinite or magmatic intrusions?
- 2) If diapirs are magmatic intrusions: link between tectonics and magmatism (leaky STEP transform).
- 3) If diapirs are made of serpentinite:
  - a new class of inherited (in situ) serpentinites in a subduction complex derived directly from the lower plate in the forearc region (LP, LT). A very different emplacement mechanisms relative to the classical emplacement mechanism of the Tethyan ophiolites.
  - Tethyan paleo-oceanography (Ocean-Continent transition, age and nature of the Tethyan crust, Tethyan fracture zones). The Ionian Sea is floored by the oldest in situ oceanic crust in the world.
  - serpentinites and seismicity: creeping vs. rupture.
- 4) Relationships between faulting, diapirism and Mt. Etna volcanism.

Other related topics that could be addressed: submarine paleoseismology and tephrochronology for regional volcanism. The group discussed if and how it is possible to coordinate with the different ongoing initiatives in the Mediterranean Sea. The group decided to prepare a pre-proposal to be submitted October 2018.

#### *IODP initiative for the Sea of Marmara*

Discussion mainly focused on how to address concerns on previous proposals. Some results are detailed below:

From questions to testable hypotheses:

- How did the fresh/marine water fluxes vary through the Marmara gateway during glacial cycles ? Did it influence Mediterranean hydrology ? What controls organic matter preservation (sapropel deposition) ?
- How does sequence stratigraphy applies to inland seas ? How are sea-level variations recorded in a silled basin ?
- How climate and paleo-environment influence sediment mass transport and paleo-seismological records ?
- What is fault slip rate variability at the 10 kyr to 500 kyr time scale and does it depend on the tectonic context (strike-slip vs extension) ?
- What are the relationships (timing, strain style and rate) between the Aegean microplate boundaries (NAF, Subduction, W Anatolian rifts, Corinth) ?
- Are earthquakes focussed on the main fault and what is their depth distribution ?
- What is the variability of fluid fluxes and fluid composition ? Does it correlate with seismic activity and strain ?

Decisions:

- Focus on tectonics and seismotectonics of North Anatolian Fault in the Sea of Marmara but put in both global and Aegean perspective (Tectonic and Paleo-climate)
  - Sea of Marmara element of Anatolian-Aegean tectonic system
  - Sites in Aegean may be considered if providing regional data and/or information of connection
- Based of pre-826 objectives, answering SSEP questions
  - Rate estimation: can built on from recent work (Kurt, Grall ...)
  - Potential for E med climate record must be developed
- Include geochemistry objectives (and new hypothesis) and prepare hole at fluid emission sites for monitoring