

## **General Theme 3**

### **3.6**

Palaeowind conditions are an important component delineated by palaeoclimate reconstruction that could reveal past climatic conditions and predict future climatic scenarios. However, researchers typically estimate ancient wind fields from temperature and humidity variations instead of using direct evidence of wind direction and strength. This situation arises from the difficulty of identifying geological information that can be used to quantify palaeo-atmospheric flow fields.

In the marine or lacustrine system, waves and currents are important hydrodynamic forces driven by the wind. The latest research indicates that wind-driven flows can be either surface currents or bottom currents, which can act on sediments and modify the sedimentary system. The circulation of surface currents generally follows the wind direction and reworks the sediments near the shoreline, resulting in sand bar and barrier bar deposits. Surface currents will eventually converge in the windward shoreline and generate bottom currents and will be compensated by the bottom currents. The bottom currents are, in general, opposite to the wind direction and form a wind-induced water circulation. The compensated bottom currents generally occur beneath the wave base and carry sediments into the deep water during storm period, forming subaqueous prograding wedges and sediment drifts. In view of actions and responses among wind, sedimentary basin and sediments, it is possible to restore ancient wind fields, including wind direction and strength with marine and lacustrine sedimentary records in geological time.

This session aims at bringing together multidisciplinary scientists, to discuss principles, methods and cases for restoring wind fields in deep time. It will address the following topics:

- 1) Interaction between wind and basin, and sedimentary records in modern lakes and seas;
- 2) Sedimentary characteristics of wind-driven waves and currents in ancient strata;
- 3) Other indicators for wind signals in ancient strata;
- 4) Methods for restoring ancient wind fields;
- 5) Regional atmospheric cyclone and evolution of wind fields in deep time;
- 6) Predicting oil reservoirs with ancient wind fields.