

# List of Abstracts

## New Concepts in Global Tectonics Journal, V. 5, No. 2, June 2017

### **A relationship between solar activity, energy transmigration, and New Zealand earthquakes**

**John L. Casey<sup>1</sup> and Dong R. Choi<sup>2</sup>** International Earthquake and Volcano Prediction Center  
(IEVPC) <sup>1</sup>[jcasey@ievpc.org](mailto:jcasey@ievpc.org), Orlando, FL  
<sup>2</sup>[dchoi@ievpc.org](mailto:dchoi@ievpc.org), Canberra, Australia

**Abstract:** Recent attention at the IEVPC has focused on the occurrence of multiple precursor signals leading to the conclusion that one or more major earthquakes (M7.0+) may occur in the Cook Strait of New Zealand. At the same time, the recent publication of analysis showing the correlation of catastrophic earthquakes in the United States with solar activity and deep-seated energy flows open up the question whether New Zealand may also have a history of its largest earthquakes linked to these natural cycles and precursors. A study of this question establishes that large earthquakes in New Zealand are in fact strongly associated with solar variation and energy flows from deep within the Earth's mantle.

**Keywords:** *earthquake, New Zealand, solar activity, sunspots, mantle, transmigration*

### **Low velocity lenses at the top of lower mantle and a new earthquake model for the Fiji-Tonga-New Zealand region**

**Dong R Choi**  
International Earthquake and Volcano Prediction Center, Canberra, Australia  
[dchoi@ievpc.org](mailto:dchoi@ievpc.org),

**Abstract:** This paper presents a new earthquake model for the Fiji-Tonga-New Zealand region based on deep Earth structures revealed in seismic tomography and geological-geophysical data. Thin low velocity lenses at the top of the upper mantle (660-720 km) in the Fiji-Tonga-Kermadec area have been illustrated in several tomographic profiles. The low velocity lenses (LVLs) at this particular depth are considered to be the partially molten mantle that serves as conduits for thermal energy (fluid/gas) to flow, or surge channels. Two bifurcating corridors of the LVLs emanating from the North Fiji Basin were established; 1) The eastern corridor, about 900 km wide, extends roughly southward to Tonga-Kermadec Islands generating very deep (500 km+) earthquakes which subsequently produce shallow earthquakes, and 2) the western corridor, 400 to 500 km wide, extends southwestward along the Fiji-Hunter Ridge Fault, which then sharply turns southward, running in parallel with the Vening Meinesz Fracture zone to reach New Zealand. The western corridor provided seismic energy for New Zealand. The TEC high anomaly which has persistently appeared in the northwestern offshore New Zealand in the early half of 2017 was generated by the stronger-than-usual energy discharged from the outer core under the North Fiji Basin which transmigrated through the western corridor LVL. This energy has not been released yet, and is expected to trigger relatively deep quakes around the Cook Strait. The present study demonstrates the powerful role of deep geological structures which control seismic energy rise from the outer core and its transmigration in the upper mantle; it has a wide ramification in deciphering deep processes of earthquakes and volcanoes, hence enabling their prediction on scientific grounds.

**Keywords:** *total electron content, low velocity lens, upper-lower mantle transition zone, surge channel, earthquake, New Zealand, whale beaching*

# Deep-seated processes and seismicity

Vadim Gordienko

Institute of Geophysics, National Academy of Sciences, Kiev, Ukraine

[gordienkovadim39@gmail.com](mailto:gordienkovadim39@gmail.com)

**Abstract:** Parameters of the medium, in which stresses build up to eventually trigger earthquakes, have been analyzed. We are talking about shear strength, elastic potential energy of crustal rocks, viscosity, stress relaxation time in crustal and upper mantle rocks, and the seismic moment. The general conclusion is as follows: geologically speaking, stresses build up quite rapidly, and it is only processes of recent activation or oceanization that can help explain the phenomenon of earthquakes. The causes of seismogenic displacements can be attributed to the formation of bodies with anomalous density due to changes in temperature and grade of metamorphism (or catagenesis) of rocks. Earthquakes at large depths (at the interface between the upper and lower mantle) occur during transformation of mantle olivine stimulated by temperature anomalies. According to available data, there are no sufficiently strong density anomalies in the lower mantle. A global partial melt layer directly at the top of the lower mantle also prevents stress accumulation. The paper analyzes zones of enhanced absorption of seismic wave energy in the Earth's crust and upper mantle due to partial melting.

**Keywords:** *seismicity of the crust and upper mantle, heat and mass transfer, deep-seated processes of recent activation and oceanization.*

## The seismic sequence in Central Italy (2016-2017)

### IV. – Clarifying some basic processes and concepts

G. P. Gregori<sup>(a)(b)(c)(d)</sup>, G. Paparo<sup>(a)</sup>, M. Poscolieri<sup>(a)</sup>, C. Rafanelli<sup>(a)</sup>, G. Ventrice<sup>(e)</sup>,

G. Garilli<sup>(a)</sup>, L. Imperatori<sup>(a)</sup>, F. Lo Castro<sup>(a)</sup>, and G. Zimatore<sup>(f)</sup>

(a) – IDASC – Istituto di Acustica e Sensoristica Orso Mario Corbino (CNR), Roma (Italy);

(b) – IEVPC (International Earthquake and Volcano Prediction Center), Orlando (Florida)

(c) – IASCC (Institute for Advanced Studies in Climate Change), Aurora (Colorado)

(d) – ISSO (International Seismic Security Organization)

(e) – PME srl, Roma (Italy)

(f) – Department of Health Sciences, University of Rome Foro Italico

(Corresponding author [giovanni.gregori@idasc.cnr.it](mailto:giovanni.gregori@idasc.cnr.it))

**Abstract:** We discuss the propagation processes of mechanical vibrations through a realistic non-homogeneous model of the Earth's crust, lithosphere and asthenosphere, specifically dealing with high frequency. The role of water is crucial, as – according to the interpretation which is here given - water is the likely cause for the formation of the Moho, for serpentinization and serpentosphere, and for the determination of the depth of the Asthenosphere-Lithosphere boundary (ALB). Serpentinization is one of the three main “engines” of “climate” and of the carbon cycle. The serpentosphere is the leading “carrier” of mechanical vibrations, also due to soaking by supercritical water (*ScriW*).

Crustal phenomena largely derive from local propagation of mechanical vibration along “natural probes” from the serpentosphere through the overlying crust. Every “natural probe” is composed of a compact solid body, and its eventual fractures are soaked with *ScriW*. Seismic transmigration occurs crossing through every area, according to a few different processes, hence at comparably different speeds. Every different region has to be considered as a different case history, depending on the specific morphology of its crust and lithosphere, and on tectonism.

The focal volume involved by every seismic phenomenon can be generalized and considered upon referring either to one single active fault, or to some large set of faults. It is shown how a generalized focal volume (*gf<sub>v</sub>*) can be approximately estimated by means of the seismic transmigration speed.

**Keywords:** *propagation of mechanical vibration - crust, lithosphere and asthenosphere - water and Moho - serpentinization and serpentosphere – “climate” engines - carbon cycle - supercritical water - “natural probe” - seismic transmigration – generalized focal volume*

## Mobile plate tectonics: a confrontation

**Peter M. James** MSc (Eng.), PhD, DIC  
Consulting Geological/Geotechnical Engineer (Retired)  
Dunalley, Australia  
[petermjames35@gmail.com](mailto:petermjames35@gmail.com)

**Abstract:** Criticism of various aspects of mobile plate tectonics over the past four or five decades has had little, if any, effect on the growing hegemony of the model. One of the reasons for this critical impotence is no doubt related to the fact that the mechanisms involved in the mobilist model are still of unknown magnitude and/or are taken to act at unknown depths. As Lambeck (1988) put it: "The total force acting on a plate represents the balance of poorly known and opposing forces and its value becomes uncertain indeed." Advocates of mobile plate tectonics are, incidentally, quite prepared to admit that some of the fundamental mechanisms/hypotheses are still in the process of transmutation. On this basis, specific field evidence is liable to be cast aside because it is in conflict with a mobilist tenet that is based on statistically derived palaeomagnetic data. This is despite the fact that geology has traditionally been based on solid observations and not isomorphism. A further claim was made by the Tarlings in their book *Continental Drift* (Penguin, 1977): that future research will prove the truth of all the mobile plate tectonic assumptions - a brave statement when prediction of favourable outcomes of future research is not the role of science but of faith. Despite the “unknowns” in the mobilist "paradigm", it is still possible to make some quantitative assessments of the various assumptions and the alleged mechanisms of the present-day paradigm. The following arguments are designed to demonstrate that, no matter how today's lithospheric plates are defined, some of their functions are untenable from a mechanics of natural materials viewpoint.

**Keywords:** *subduction, sea floor spreading, incipient oceans, Gondwana break-up*

## A non-spreading interpretation of the sea floor

**Peter M. James**, MSc (Eng.), PhD, DIC  
PO Box 95, Dunalley, Tasmania, Australia 7177  
Consulting Geological/Geotechnical Engineer (Retired)  
[petermjames35@gmail.com](mailto:petermjames35@gmail.com)

**Abstract:** The patterns on the ocean floors are shown to be open to alternative interpretations based on the Earth acting as a dipole: magnetic reversals then being the product of polar reversals, while the Earth's crust remains in a static situation. Evidence of recent Earth "polar reversals" is provided by accounts from pre-history.

**Keywords:** *Sea floor magnetic anomalies, geographic polar reversals, sea floor rifting, polar reversals*

# Honolulu sea level forecast based on local and global tide gauge measurements

**Albert Parker**

Independent Scientist, Formerly James Cook University, Townsville, Australia  
[albert.parker@jcu.edu.au](mailto:albert.parker@jcu.edu.au)

**ABSTRACT:** The Intergovernmental Panel on Climate Change (IPCC, [www.ipcc.ch](http://www.ipcc.ch)) has predicted since 1990 accelerating sea level rises to produce almost 1 metre sea level rise by 2100. However, during the last 26 years and 4 months, there has been no sign of these accelerations. At the world tide gauges, the measurements show only sea level oscillations about the nearly constant trend experienced since the early 1900s. After the latest IPCC assessment report of 2013, more alarming predictions have been made. In the specific case of Honolulu, we show that the sea levels are rising at a rate of  $+1.434 \pm 0.211$  mm/year, subjected to a significant deceleration of  $-0.01004 \pm 0.01454$  mm/year<sup>2</sup>. Different worldwide data sets of tide gauges, such as *California-8*, *PSMSL-301*, *Mitrovica-23*, *Holgate-9*, *US-71* and *NOAA-199*, all consistently support the oscillating and non-accelerating pattern and no dramatic sea level rate of rise. The 1 metre sea level rise hypothesis in Honolulu appears therefore to be pure speculation.

**Keywords:** *sea levels, predictions, measurements, models, validation*

## Sea-level rise acceleration in the northern Mediterranean Sea

**Albert Parker**

Independent Scientist, Formerly James Cook University, Townsville, Australia  
[albert.parker@jcu.edu.au](mailto:albert.parker@jcu.edu.au)

**Abstract:** The sea level patterns of MARSEILLE, GENOVA, VENEZIA (PUNTA DELLA SALUTE) and TRIESTE exhibit negligible small accelerations. The difference between the relative sea level rates of rise in VENEZIA and the other locations is mostly due to subsidence. The average sea level pattern in the Northern Mediterranean does not agree with the CSIRO global mean sea level reconstruction. MARSEILLE, GENOVA, VENEZIA (PUNTA DELLA SALUTE) have negative acceleration and TRIESTE has a small positive acceleration. Conversely, the CSIRO global mean sea level reconstruction has a large positive acceleration.

**Keywords:** *sea levels, predictions, measurements, models, validation*