

New Concepts in Global Tectonics

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Editor: Dong R. CHOI (editor@ncgt.org) www.ncgt.org

Editorial board

Ismail BHAT, India (bhatmi@hotmail.com); Peter JAMES, Australia (pmjgeotech@yahoo.com.au);
Leo MASLOV, Russia (ms_Leo@hotmail.com); Cliff OLLIER, Australia (cliffol@cyllene.uwa.edu.au);
Nina PAVLENKOVA, Russia (ninapav@ifz.ru); David PRATT, Netherlands (davidpratt05@cs.com);
Giancarlo SCALERA, Italy (scalera@ingv.it); N. Christian SMOOT, USA (christiansmoot532@gmail.com);
Karsten STOREDVEDT, Norway (Karsten@gfi.uib.no); Yasumoto SUZUKI, Japan (yasu-suzuki@vega.ocn.ne.jp);
Boris I. VASILIEV, Russia (tesla@poi.dvo.ru)

CONTENTS

From the Editor Changing tide is irreversible.....	2
Letters to the Editor	
Basic intrusives of great age in the Pacific and the Atlantic Oceans, <i>Chris PRATCH</i>	2
Freedom of scientific thought, <i>Peter JAMES</i>	3
Articles	
Similarities of a martian dome with terrestrial salt domes, <i>Davide BAIONI and Forese Carlo WEZEL</i>	4
A dome in the eastern part of a canyon in Tithonium Chasma, the northern trough of the western grabens of Valles Marineris (Mars) has been investigated in detail using HRSC, MOC and THEMIS data. Analysis of the dome surface highlighted some landforms that strongly resemble karst landforms that occur on the Earth. A comparison of the features displayed by the martian dome with the features of a terrestrial salt diapir located in the area of the Persian Gulf indicates that from the morphological point of view martian and terrestrial domes show noticeable similarities.	
Some paradoxes of plate-tectonic palaeogeodynamic models and reconstructions (Russian Southeast), <i>Alexander GAVRILOV</i>	19
Analysis of regional geological data for the southern part of the Russian Far East reveals many contradictions with plate-tectonic geodynamic models and reconstructions. Ideas about intensive horizontal displacements (from many hundreds to 1,600 kilometers) of lithospheric plates and separate blocks (terranes) in the region are in conflict with the data on the existence of a stable regional network or pattern of magma-controlling deep faults, on the prolonged endogenous activity of separate tectono-magmatic rises and median massifs formed during hundreds of millions years, and on the significant duration of the development of ore-magmatic systems. Proposed plate tectonic models cannot explain the domination of vertical tectonic motions in the Late Cenozoic, the stability of Late Permian volcano-tectonic structures and the presence of little disturbed Mesozoic platform covers.	
300-day seismic cycles in the southern segment of the San Andreas Fault, California, <i>Valentino STRASER</i>	30
'Twin Earthquakes (TE)' are earthquakes that recur at a regular interval of about 300 days, and appear to be related to peculiar configurations of planetary orbits, in specific seismic regions on the Earth. Already studied with reference to the North-Western and Central Italian Apennines, the model is now applied to the San Andreas fault system in Southern California, the Sierra Nevada zone, the Mojave region, and the Los Angeles area, showing evidence that there the seismic phenomena regularly recur approximately every 300 days, with focuses roughly at the same depth. The regularity with which TE occur allows seismic phenomena to be forecast with a limited margin of error for latitude, longitude and epicentre, without specifying the earthquakes' magnitude, possibly enabling the mitigation of their impact on human lives and economic damage.	
Geoid tectonics. Chapter 3. General effects of polar wander, <i>Peter JAMES</i>	54
The effects associated with (geographical) polar wander are twofold: geoid stress imposed on the Earth's crust by changes in latitude; the effect of the change in centripetal acceleration on the distribution of the oceans. Some introductory discussion of the former shows that a migration of an element of crust from pole to equator, or vice versa, can be expected to cause deformation or, in certain cases, failure of the Earth's crust. Massive changes in oceanic distribution, under polar wander, are evidenced by some boreholes from DSDP drilling program and by features such as submarine valleys. Fluctuation in ocean depths of some 4 km is implied.	
NCGT Briefs Earthquakes and their tsunamis, <i>Pencho BINEV</i>	67
Publications Earthquake clouds in Iran, <i>Guangmeng GUO and Bin WANG</i>	67
Book review David Archibald: Solar Cycle 24, <i>Cliff OLLIER</i>	68