Available online at www.sciencedirect.com
SCIENCE DIRECT®
C. R. Geoscience 336 (2004) 235–241
COMPTES RENDUS GEOSCIENCE

Foreword

The Corinth Rift Laboratory

The Gulf of Corinth, in eastern Greece, is one of the most seismic regions in Europe. It is possibly the fastest continental rift in the world and provides an ideal site for investigating in situ the physics of earthquake sources and for developing efficient seismic hazard reduction procedures. But this requires first a better understanding of the rifting process and of the correlated fluid faults' interactions. In fact, this rift zone is also a live analogue of the conditions that prevailed in the North Sea region some 20 million years ago and therefore provides means to better understand today oil reservoirs of western Europe. It has been chosen as a site for developing an in situ laboratory, the Corinth Rift Laboratory (CRL).

The Corinth Rift (Fig. 1), which separates the Peloponnesus from continental Greece, is a 110 km-long, N 110° E-oriented graben, bounded by systems of very recent normal faults (less than 2 Myr old). It is located within the extension zone generated by the counterclockwise rotation of the Anatolian–Aegean bloc to the south, and the clockwise rotation of northern Greece to the north [24]. This structure is the site of continental break-up, with up to 1.5 $\mathrm{cm\,yr^{-1}}$ of north-south extension and more than 1 $\mathrm{mm\,yr^{-1}}$ of uplift of the southern shore [5,7]. The high rates of tectonic faulting and uplift concur to the outcrop of very recent fault planes with large offsets.

The causes for this fast and intense tectonic activity are multiple and their relative significance is still being debated. Some of the forces at work come from gravitational instability of the north–south-oriented Hellenides belt and from crustal lithospheric thinning in the back-arc region of the subduction margin south and west of the Peloponnesus [14,18]. In addition the Evvia and Corinth grabens may accommodate part of the deformation associated with the western-propagating southern branch of the North-Anatolian Fault [1].

At the location where they are intersected by the Corinth Rift, the Hellenides are constituted by a succession of nappes that result from an Alpine east–west compression [27]. From east to west they include the Parnassos nappe, which is overthrust on the Pindos nappe, itself thrust over the Gavrovo–Tripolitza nappe. Below these nappes, the HP–LT metamorphic Phyllades nappe is likely to be encountered, although very little information is still available with this respect [15].

The progressive east–west opening and collapsing of the Corinth graben is well recorded by facies, distribution, and thickness of the infilling sedimentary sequence. It includes continental and shallow-water lacustrine facies from Pliocene times followed by first marine sediments of Middle Pleistocene age [19]. At present, the marine basin in the Corinth Gulf reaches water depths of 860 m in its easternmost part, where its sedimentary infill may reach up to 2.5 km [8]. But the basin is only 65 m deep at its western end, near the Rio-Antirio area [28].

This fast opening is associated with a shallowly, northerly dipping seismic zone located at depths ranging from 6 to 12 km. Five events of magnitude larger than 5.8 have been observed in this region within the last 40 years. But all the observed deformations cannot be accounted for only by the observed seismic activity. Yet the importance and mechanics of non-seismic deformation remain to be documented. It seems very likely that fluids play a very significant part in this deformation process. Earthquakes located under the northern shore usually indicate extensional failure along east–west planes dipping north 20–40°. However, fault planes exposed at surface in the Aigion area

1631-0713/$ – see front matter
doi:10.1016/j.crte.2004.02.001

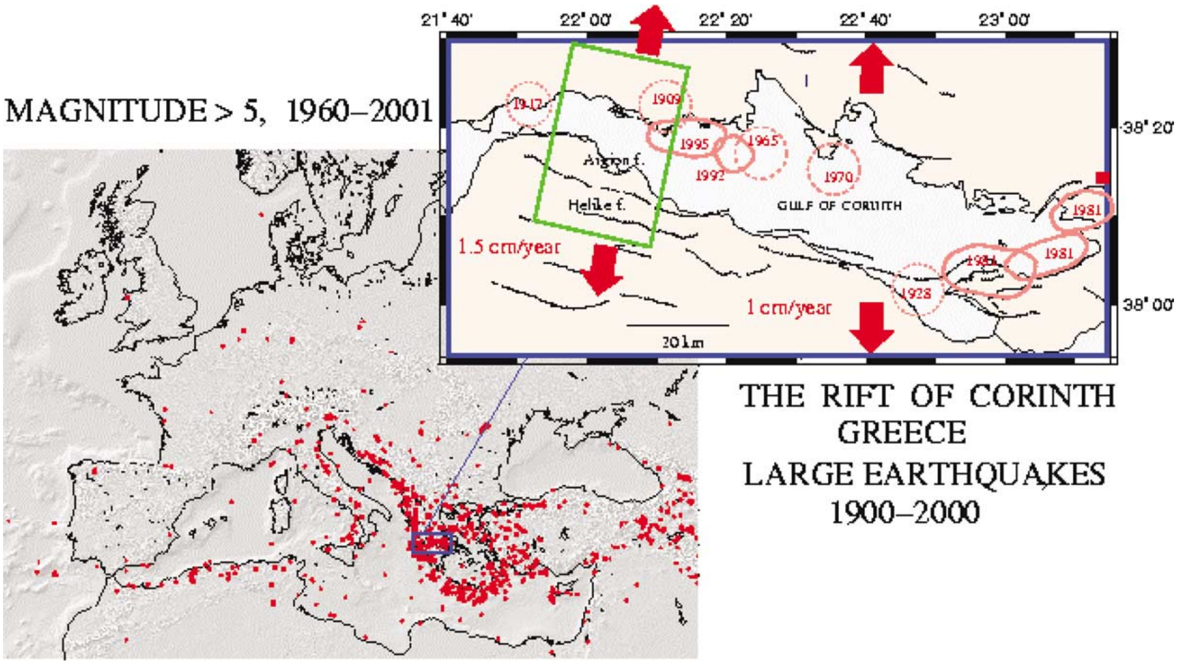

Fig. 1. General sismo-tectonic context of the Corinth Rift. The CRL location is the green rectangle centred on Aigion. Recent earthquakes are indicated by their date and the approximate size of their seismic rupture. The European map shows all seismic events with magnitude larger than 5, as observed from 1960 to 2001.

are considerably steeper (e.g., the Helike fault dips in the range 55–70°).

One of the key goals of the Laboratory is to understand the geometric connections between outcropping steeply dipping fault planes and the deeper low dipping seismogenic sources. Contrasting interpretations are feasible, as illustrated by the alternative hypotheses: steeply dipping faults abutting against a low-angle, seismically active detachment [36], or listric faulting (progressive down dip curvature of the fault planes into low-angle detachments [13,38]).

But the main objective of the Corinth Rift Laboratory is to document, through direct in situ observations and experimentation, the mechanics of faulting from both the quasi-static and the dynamic point of views. Special attention is given to interactions between circulating fluids and fault mechanics, with particular focus on the hydro-thermo-mechanical coupling but also with consideration on the role of healing and/or alteration. It includes observations at ground surface of tectonic features, including a subsurface seismic network, the continuous monitoring of surface deformation by continuous GPS, tiltmetry and extensometry, the monitoring of water level or flow rate variations of natural springs and their changes in chemical composition, including rare gas content.

In addition, the Laboratory involves deep boreholes (presently two) for both, better characterization of the geological structure and in situ observation of fluid–fault interactions. They are meant to provide in situ measurements for the determination of the regional heat flux and of the regional stress field. They provide information on the hydraulic properties of active faults and their surrounding walls. They document, by direct observations, the natural flow occurring through those same faults before, during and after an earthquake. Finally, the boreholes instrumentation yields direct, in situ observation of site effects on seismic signals, because of the influence of superficial soft soils deposits.

The Corinth Rift Laboratory is located in the vicinity of the city of Aigion, some 40 km east from Patras. It covers an area about 30 km × 30 km, extending across the gulf between Aigion on the southern shore and Eratini on the northern shore. This area was chosen for several reasons:

- the local strain rate and the microseismicity are highest;
- the faults in this area have not been the site of any earthquake with magnitude larger than 5.5 for more than a century;
- the site is at the western limit of the 1995, magnitude 6.2 so-called Aigion earthquake [3];
- the gulf is fairly narrow there (less than 8 km), allowing mostly on-land access to instrumented sites;
- the site is far enough from both ends of the rift zone so that it is submitted to a pure extensional deformation regime.

This site has been chosen after a workshop sponsored by the International Drilling Program (ICDP) and organized in Athens in 1997 [9]. Its objective was to discuss the appropriateness of drilling an ultra deep borehole (8 to 10 km) in this area for a better understanding of the physics of earthquakes by direct observations within the seismogenic zone. The workshop concluded on the necessity to conduct first an investigation at shallower depth in order to ascertain some hypothesis on the sismotectonics of the area. And this launched the CRL project.

The project has been supported mostly by the Energy, Environment and Sustainable Development program of the European Commission '5th Framework Program'. Initially three projects were accepted for funding in 1999, namely CORSEIS, DGLab and 3F-Corinth, which all have reached their end in 2003. Presently, complementary projects have been accepted and are in their developing phase. In addition, the French and German research foundations (GDR-Corinth of CNRS, GRECO from DFG) have both supported very efficiently scientific work from various teams as well as some local instrumentation (in particular the CRL seismic network).

The present thematic issue presents the preliminary results that have been obtained in the field since the launching of CRL in 1999. It will also help to initiate a more elaborate interpretation of these multidisciplinary data through the development of unifying models. It constitutes the base for defining the future of CRL and the appropriateness of drilling at greater depth. In fact, it already outlines the decoupling that exists between the deformation process in the superficial nappes and the physics at work within the seismogenic zone.

The following themes are discussed in this issue:

- the regional structure;
- rifting velocity and time constraints;
- investigations of quasi-static and dynamic deformation;
- hydro-geochemistry monitoring;
- results from the 1000 m deep AIG10 borehole.

1. The regional structure

Ghisetti and Vezzani [16] show how the Plio-Pleistocene sedimentation and fault segmentation in the Gulf of Corinth are controlled by inherited structural fabric.

Pi Alperin et al. [31] propose a seismic refraction image of the southern Corinth Rift shoulder at Derveni (East of Aigion) that identifies the contact between the carbonates and the basement rock (identified by its P wave velocity equal to 6 $\text{km}\,\text{s}^{-1}$). These results were obtained at the occasion of the *R/V Maurice Ewing* seismic-reflection campaign shot in 2001, the results of which have yet to be published.

LaTorre et al. [21] propose a new method for detecting in seismograms converted phases between the P and S arrivals. The method provides means to identify an interface at 3 km depth, in the Psaromita region, on the northern shore of the CRL site.

2. Rifting velocity and time constraints

Malartre et al. [26] analyse in detail the Gilbert-type delta system observed along the Vouraikos River, just east of the CRL site, on the southern shore of the rift. This analysis builds on the interactions between faulting and sedimentation processes for a precise description of the local geodynamic evolution.

Causse et al. [6] propose a kinematic description of the rifting process during the last million years, from a joint analysis of calcite dating and syntectonic sedimentary characteristics.

Moretti et al. [28] present results from long piston coring obtained by the Marion Dufresne through Holocene sediments in the eastern part of the rift.

They conclude on sedimentation and subsidence rates for the last 13 kyr.

3. Quasi-static and dynamic deformation

Avallone et al. [2] discuss GPS results collected during the last 11 years around the Corinth Gulf and show how active deformation is localized in a narrow band located just south from the northern shore of the rift. Rotations on both sides of the rift are discussed.

Bernard et al. [4] describe results from continuous recording of strain and tilt on Trizonia Island, i.e., at the location where GPS data suggest deformation rate is the largest. An interesting slow transient strain event is described just before a magnitude-3.5 earthquake located some 15 km away.

De Martini et al. [12] obtain estimates of the slip rates of the Aigion and Eliki Faults from uplifted terraces and come up with values in the order of 1 to 1.2 $\mathrm{mm\,yr^{-1}}$ for the footwall uplift of both faults.

Pantosti et al. [30] have conducted a palaeoseismological investigation of Aigion Fault. They conclude that slip rates range from 1.6 to 4.3 $\mathrm{mm\,yr^{-1}}$ with a 360-year recurrence interval for major (magnitude 6?) earthquakes.

Lyon-Caen et al. [25] present the first results obtained with the CRL seismic network, for the period April 2000 – December 2001. They confirm the low northerly-dipping seismogenic zone between 4.5 and 11 km. In addition, they discuss a seismic swarm that occurred south of Aigion on a reactivated alpine structure oriented SW–NE and dipping 40° to the west.

Pitilakis et al. [33] present the first results of the soft soil array, a set of accelerometers distributed at various depths within soft sediments in the Aigion harbour. This array is meant to provide direct recording of seismic signals in soft soils. Results for a magnitude *Ms* 3.5 earthquake are presented.

4. Hydro-geochemistry

Pizzino et al. [32] present results from the geochemical analysis of natural springs distributed throughout the southern section of CRL, east and west of Aigion. More than 50 sites have been analysed. They conclude that all the waters that have been analysed are of meteoric origin, without any trace of volcanic, juvenile or magmatic element.

Leonardi and Gavrilenko [23] present results from the monitoring of water level and flow rate in two springs, respectively east and west of Aigion. Both show tide and barometric effects. These are taken to advantage for characterising the hydraulic conductivity and the specific storativity of the corresponding aquifer. This suggests that results from this monitoring will be responsive to tectonic stress variations.

Labaume et al. [20] analyse water circulation within the Pirgaki Fault, which is located south of CRL. They show how cathodoluminescence microscopy helps to identify phases of meteoritic percolation during and immediately after earthquakes and how closed systems develop during interseismic periods. From these observations, they propose preliminary qualitative models of structural development and fluid flow in active normal faults.

5. Results from the 1000 m-deep AIG10 well

Cornet et al. [10] summarize the results from the 1000 m-deep AIG10 well that intersects the Aigion Fault at 760 m within the Mesozoic carbonates, below the Quaternary deposits. They observe that the 60° dip of the fault is consistent with the friction characteristics measured in the lab. They also show that the fault together with the radiolarite sequence constitute an efficient hydraulic barrier below which a fast meteoric water circulation erases any effect of possible deeper upward flow. This raises the question on identifying methods for a better understanding of the regional water and heat flux at depth.

Naville et al. [29] present results from the seismic profiles that were run prior to drilling the well. These results are integrated with vertical seismic profiles run in AIG10 well together with results from sonic logs for identifying the fault offset within the basement rock.

Rettenmaier et al. [35] describe the lithologic log derived from the drilling operation and discuss the results in the context of regional geology and tectonics.

Lemeille et al. [22] analyse in detail the recent synrift deposits sampled in the hangingwall of the Aigion Fault and discuss the correlative dating problem.

Daniel et al. [11] propose a macroscopic structural analysis of the Aigion Fault at its intersection with the well. It is based on the cores collected above and within the fault, together with geophysical imaging logs run within the same depth interval.

Song et al. [37] report on laboratory results for permeability measurements conducted on fault material as well as on intact limestone and Quaternary clay deposits encountered just before entering the basement rock. They show that the clay core zone within the Aigion Fault results from the smearing of radiolarite and is not a gouge.

Sulem et al. [39] report on the experimental characterization of the thermo-poro-mechanical properties of the clay that constitute the core of Aigion Fault at 760 m. They show that a softening behaviour under thermal loading is possible.

Giurgea et al. [17] present results from hydraulic tests run in AIG10, at various depths, during drilling. They propose a preliminary hydrogeological model containing flow parameters and flow paths.

Prioul et al. [34] present results from a dipole sonic log that gives insight into local anisotropic directions. These are discussed in terms of principal stress directions. It is concluded that the maximum horizontal principal stress direction is parallel to the Aigion Fault direction.

This combination of surface and borehole observations shows that the Aigion Fault is very probably not listric and that it obeys the classical friction law. But it also demonstrates that the system of normal faults of the southern shore of the rift strongly influences the regional water flow, a feature that enhances the asymmetry of the rift structure. Producing a better understanding of the down-going flux within the Alpine nappes becomes an important objective with particular emphasis on the characterization of the interface between this descending flux and the likely up-flowing fluids associated with the deeper crust thinning. This demonstrates the need of a deep (5 km?) well to document properly the decoupling that exists at the base of the nappes. Whether this decoupling occurs above or below the Phyllades nappe will have to be ascertained and may be one of the important objectives of the next drilling program.

We hope that this set of papers helps to initiate cross-disciplinary discussions so as to produce, progressively, well-validated models of the various processes at work in the Corinth Rift. If this special issue becomes the base for such cross-disciplinary discussions, we will have reached our goal. The conclusions will help to define the future of this European Corinth Rift Laboratory that will include not only the gathering of in situ data but also the development of a large database, including models, easily accessible to all concerned entities.

To conclude, we would like first to thank all the persons from the various funding agencies that have helped to make the CRL project a reality. Our special thanks go to M. Yeroiani, G. Ollier, J. Garnish and J. Schupper, from the European Commission, P. Vidal and P. Machetel from CNRS, M. Zoback and R. Emermann from ICDP. We also wish to acknowledge the support in the Aigion area of both public and private parties, with particular attention to the Koronakis family for the piece of land they have let us use for the deep drilling project.

We also would like to thank very sincerely J. Dercourt, editorial director of *Comptes rendus Geoscience* for accepting to host this special publication.

Finally, our sincere thanks go to H. Paquet and R. Raymond for making sure that all papers were reviewed and received on time and were consistent with the *Comptes rendus Geoscience* format.

François H. Cornet [*]
Pascal Bernard
Département de Sismologie,
Institut de physique du Globe de Paris, France
E-mail address: cornet@ipgp.jussieu.fr (F.H. Cornet)

Isabelle Moretti
Division Géologie–Géochimie,
Institut Français du Pétrole, France

References

[1] R. Armijo, B. Meyer, G.C.P. King, A. Rigo, D. Papanastassiou, Quaternary evolution of the Corinth Rift and its implications for the Late Cenozoic evolution of the Aegean, Geophys. J. Int. 126 (1996) 11–53.

[2] A. Avallone, P. Briole, A.M. Agatza-Balodimou, H. Billiris, O. Charade, C. Mitsakaki, A. Nercessian, K. Papazissi,

---

[*] Corresponding author.

D. Paradissis, G. Veis, Analysis of eleven years of deformation measured by GPS in the Corinth Rift Laboratory area, C. R. Geoscience 336 (2004) 301–311, this issue.

[3] P. Bernard, P. Briole, B. Meyer, H. Lyon-Caen, J.-M. Gomez, C. Tiberi, C. Berge, R. Catin, D. Hatzfeld, C. Lachet, B. Lebrun, A. Deschamps, F. Courboulex, C. Laroque, A. Rigo, D. Massonet, P. Papadimitriou, J. Kassaras, D. Diagourtas, K. Makropoulos, G. Veis, E. Papazisi, C. Mitsakaki, V. Karakostas, P. Papadimitriou, D. Papanastassiou, G. Chouliaras, G. Stavrakakis, The $Ms = 6.2$, June 15, 1995 Aigion Earthquake (Greece): evidence for Low Angle Normal Faulting in the Corinth Rift, J. Seismol. 1 (1997) 131–150.

[4] P. Bernard, F. Boudin, S. Sacks, A. Linde, P.A. Blum, C. Courteille, M.-F. Esnoult, H. Castarède, S. Felekis, H. Billiris, Continuous strain and tilt monitoring on the Trizonia Island, Rift of Corinth, Greece, C. R. Geoscience 336 (2004) 313–323, this issue.

[5] P. Briole, A. Rigo, H. Lyon-Caen, J.-C. Ruegg, K. Papazissi, C. Mitsakaki, A. Balodimou, G. Veis, D. Hatzfeld, A. Deschamps, Active deformation of the Corinth Rift, Greece: results from repeated Global Positioning System surveys between 1990 and 1995, J. Geophys. Res. 105 (2000) 25605–25625.

[6] C. Causse, I. Moretti, R. Eschard, L. Micarelli, B. Ghaleb, N. Frank, Kinematics of the Corinth Gulf inferred from calcite dating and syntectonic sedimentary characteristics, C. R. Geoscience 336 (2004) 281–290, this issue.

[7] P.J. Clarke, R.R. Davies, P.C. England, B. Parsons, H. Billiris, D. Paradissis, G. Veis, P.A. Cross, P.H. Denys, V. Ashkenazi, R. Bingley, H.G. Kahle, M.V. Muller, P. Briole, Crustal strain in central Greece from repeated GPS measurements in the interval 1989–1997, Geophys. J. Int. 135 (1998) 195–214.

[8] C. Clément, Imagerie sismique crustale de la subduction hellénique et du golfe de Corinthe, Ph.D. Thesis, University Paris-7, 2000, 178 p.

[9] F.H. Cornet, G. Borm, T. McEvilly, I. Vardoulakis, in: Proc. 1st Workshop on the Development of a Multi-Borehole Observatory at the Gulf of Corinth, Athens, 1997, ICDP 1996–1997 report, http://www.corinth-rift-lab.org.

[10] F.H. Cornet, M.L. Doan, I. Moretti, G. Borm, Drilling through the active Aigion Fault: The AIG10 well observatory, C. R. Geoscience 336 (2004) 395–406, this issue.

[11] J.-M. Daniel, I. Moretti, L. Micarelli, St. Essautier-Chuyne, C. Delle Piane, Macroscopic structural analysis of AIG10 well (Gulf of Corinth, Greece), C. R. Geoscience 336 (2004) 435–444, this issue.

[12] P.M. De Martini, D. Pantosti, N. Palyvos, F. Lemeille, L. McNeil, R. Collier, Slip rates of the Aigion and Eliki Faults from uplifted marine terraces, Corinth Gulf, Greece, C. R. Geoscience 336 (2004) 325–334, this issue.

[13] T. Doutsos, G. Poulimenos, Geometry and kinematics of active faults and their sismotectonics significance in the western Corinth–Patras rift (Greece), J. Struct. Geol. 14 (6) (1992) 689–699.

[14] T. Doutsos, G. Piper, K. Boronkey, I.K. Koukouvelas, Kinematics of the Central Hellenides, Tectonics 12 (1993) 936–953.

[15] N. Flotté, Caracterisation structurale et cinematique d'un rift sur detachment : le rift de Corinthe–Patras, Grèce, Ph.D. Thesis, University Paris-11, 2002, 197 p.

[16] F. Ghisetti, L. Vezzani, Plio-Pleistocene sedimentation and fault segmentation in the Gulf of Corinth (Greece) controlled by inherited structural fabric, C. R. Geoscience 336 (2004) 243–249, this issue.

[17] V. Giurgea, D. Rettenmaier, L. Pizzino, I. Unkel, H. Hötzl, A. Förster, F. Quatrocchi, Preliminary hydrogeological interpretation of the Aigion area from the AIG10 borehole data, C. R. Geoscience 336 (2004) 467–475, this issue.

[18] L. Jolivet, J.-P. Brun, P. Gautier, S. Lallemant, M. Patriat, 3D kinematics of extension in the Aegean region from the early Miocene to the present, insights from the ductile crust, Bull. Soc. Geol. France 165 (3) (1994) 195–209.

[19] B. Keraudren, D. Sorel, The terraces of Corinth [Greece] a detailed record of eustatic sea-level variations during the last 500 000 years, Mar. Geol. D 77 (1987) 99–107.

[20] P. Labaume, E. Carrio-Schaffhauser, J.-F. Gamond, F. Renard, Deformation mechanisms and fluid driven mass transfers in the recent fault zones of the Corinth Rift (Greece), C. R. Geoscience 336 (2004) 375–383, this issue.

[21] D. Latorre, J. Virieux, T. Monfret, H. Lyon-Caen, Converted seismic wave investigation in the Gulf of Corinth from local earthquakes, C. R. Geoscience 336 (2004) 259–267, this issue.

[22] F. Lemeille, F. Chatoupis, M. Foumelis, D. Rettenmaier, I. Unkel, L. Micarelli, I. Moretti, C. Bourdillon, C. Guernet, C. Müller, Recent syn-rift deposits in the hangingwall of the Aigion Fault (Gulf of Corinth, Greece), C. R. Geoscience 336 (2004) 425–434, this issue.

[23] V. Leonardi, P. Gavrilenko, Hydrologic measurements in wells in the Aigion area (Corinth Gulf, Greece): preliminary results, C. R. Geoscience 336 (2004) 385–393, this issue.

[24] X. Le Pichon, N. Chamot-Rooke, S. Lallement, R. Noomen, G. Veis, Geodetic determination of the kinematics of central Greece with respect to Europe: implications for Eastern Mediterranean tectonics, J. Geophys. Res. 100 (B7) (1995) 12675–12690.

[25] H. Lyon-Caen, P. Papadimitriou, A. Deschamps, P. Bernard, K. Makropoulos, F. Pacchiani, G. Patau, First results of the CRL seismic network in the western Corinth Rift: evidence for old fault reactivation, C. R. Geoscience 336 (2004) 343–351, this issue.

[26] F. Malartre, M. Ford, E.A. Williams, Preliminary biostratigraphy and 3D geometry of the Vouraikos Gilbert-type fan delta, Gulf of Corinth, Greece, C. R. Geoscience 336 (2004) 269–280, this issue.

[27] J.-L. Mercier, D. Sorel, K. Simeakis, Changes of the state of stress in the overriding plate of a subduction zone: the Aegean Arc from the Pliocene to the present, Ann. Tectonicae 1 (1987) 20–39.

[28] I. Moretti, V. Lykoussis, D. Sakellariou, J.Y. Reynaud, B. Benziane, A. Prinzhoffer, Sedimentation and subsidence rate in the Gulf of Corinth: what we learn from the *Marion Dufresne*'s long-piston coring, C. R. Geoscience 336 (2004) 291–299, this issue.

[29] C. Naville, S. Serbutoviez, I. Moretti, J.-M. Daniel, A. Throo, F. Girard, A. Sotiriou, A. Tselentis, C. Skarpzelos, C. Brunet,

F.H. Cornet, Pre-drill surface seismic in vicinity of AIG10 well and post-drill VSP, C. R. Geoscience 336 (2004) 407–414, this issue.

[30] D. Pantosti, P.M. De Martini, I. Koukouvelas, L. Stamatopoulos, N. Palyvos, S. Pucci, F. Lemeille, S. Pavlides, Palaeosismological investigations of the Aigion Fault (Gulf of Corinth, Greece), C. R. Geoscience 336 (2004) 335–342, this issue.

[31] J.M. Pi Alperin, J.M. Martelot, A. Galvé, M. Sachpazi, B. Taylor, M. Laigle, A. Hirn, Seismic refraction imaging of the southern Corinth Rift shoulder at Derveni, C. R. Geoscience 336 (2004) 251–257, this issue.

[32] L. Pizzino, F. Quatrocchi, D. Cinti, G. Galli, Fluid geochemistry along the Eliki and Aigion seismogenic segments (Gulf of Corinth, Greece), C. R. Geoscience 336 (2004) 367–374, this issue.

[33] K. Pitilakis, K. Makropoulos, P. Bernard, F. Lemeille, H. Lyon-Caen, C. Berge-Thierry, T. Tika, M. Manakou, D. Diagourtas, D. Raptakis, P. Kallioglou, K. Makra, D. Pitilakis, L.F. Bonilla, The Corinth Gulf Soft Soil Array (CORSSA) to study site effects, C. R. Geoscience 336 (2004) 353–365, this issue.

[34] R. Prioul, T. Plona, M. Kane, B. Sinha, P. Kaufman, C. Signer, Azimuthal anisotropy using shear dipole sonic: insights from the AIG10 well, Corinth Rift Laboratory, C. R. Geoscience 336 (2004) 477–485, this issue.

[35] D. Rettenmaier, V. Giurgea, H. Hötzl, A. Förster, The AIG10 drilling project (Aigion, Greece): interpretation of the litholog in the context of regional geology and tectonics, C. R. Geoscience 336 (2004) 415–423, this issue.

[36] A. Rigo, H. Lyon-Caen, R. Armijo, A. Deschamps, D. Hatzfeld, K. Makropoulos, P. Papadimitriou, P. Kassaras, L. Kassaras, A microseismic study of the western part of the Gulf of Corinth (Greece): implications for the large-scale normal faulting mechanisms, Geophys. J. Int. 126 (1996) 663–688.

[37] I. Song, St.C. Elphick, N. Odling, I.G. Main, T. Ngwenya, Hydro-mechanical behaviour of fine-grained calcilutite and fault gouge from the Aigion Fault Zone, Greece, C. R. Geoscience 336 (2004) 445–454, this issue.

[38] D. Sorel, A Pleistocene and still-active detachment fault and the origin of the Corinth–Patras rift [Greece], Geology 28 (1) (2000) 83–86.

[39] J. Sulem, I. Vardoulakis, H. Ouffroukh, M. Boulon, J. Hans, Experimental characterization of the thermo-poro-mechanical properties of the Aegion Fault gouge, C. R. Geoscience 336 (2004) 455–466, this issue.