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The Newsletter of the Benfield Hazard Research Centre

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BENFIELD HAZARD RESEARCH CENTRE

UCL

Editorial

During early April, the hazard centre underwent the second name change in its history and became the Benfield Hazard Research Centre. The change is a reflection of brand consolidation by the centre's commercial sponsor in the light of a recent large acquisition in the United States. Shortly the Benfield HRC will adopt a new logo and during coming months there will be major changes in the design of the website and in the format of publications such as Issues in Risk Science and the Benfield HRC Technical Papers series. The new web address is www.benfieldhrc.org, which you will be automatically taken to when logging on to the old site. Notwithstanding these changes, it is business as usual at Benfield HRC. We remain the largest, academic, multi-disciplinary hazard centre in Europe, dedicated to curiosity-driven research into hazard and risk science, and providing independent services in consultancy, vetting, information provision, and education and training.

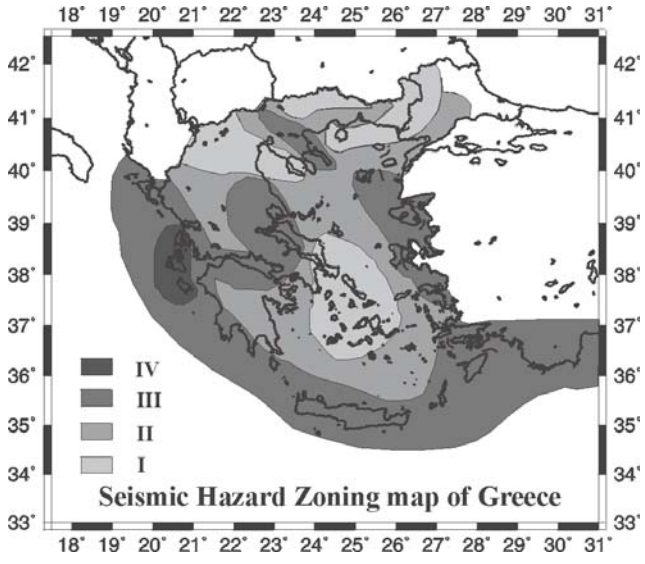
What's Inside

EU project zeros in on high seismicity earthquake zones

Europe is by no means immune from large and damaging earthquakes and with the highest seismicity in Europe – around two percent of the world total – Greece is particularly susceptible. Under the auspices of the EU-funded SHIELDS (Safeguarding hydrocarbons inside earthquake local defence systems) project, we have recently reappraised seismic hazard in the country. Large earthquakes in Greece cause strong ground shaking and damaging levels of vibration and the Greek Seismic Code map extends to levels of 36 percent of the acceleration due to gravity (g) for a mean-return period of 475 years. This is equivalent to a 1-in-10 chance of exceedance in 50 years. National seismic risk and hazard maps tend to end at national borders whereas earthquakes are no respecters of such arbitrary boundaries. Consequently, those countries bordering Greece - Albania, Macedonia, Bulgaria and Turkey – also have a significant level of seismic hazard and risk.

Seismic hazard maps provide a snapshot of hazard; an opinion; an estimate, based on contemporary partial knowledge. An opportunity has recently arisen to revisit older seismic hazard estimates for Greece in the light of substantial new data provided by

Greek Seismic Code hazard zoning map: peak ground acceleration values (%g) for a mean-return period of 475-year (Zones: I 12%g, II 16%g, III 24%g, IV 36%g)



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EU project zeros in on high seismicity earthquake zones

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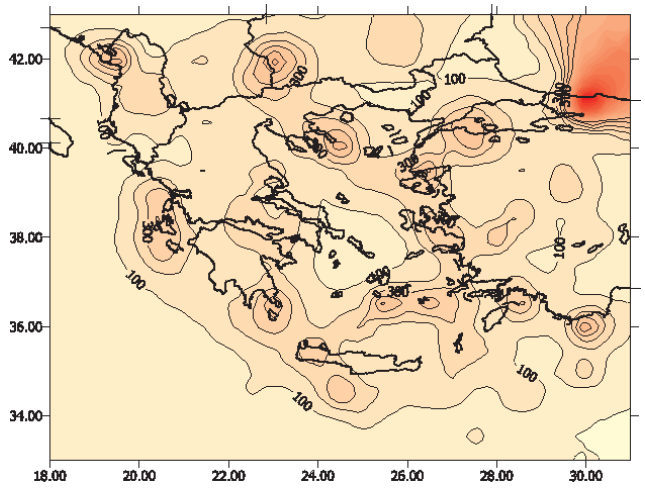
two decades of earthquakes since 1979 and rigorous studies of just how strong ground shaking decreases with distance after a quake. Studies of six cities produced the reassuring result that changes to the newly calculated values of peak ground acceleration are only about 10 percent. Two of the six cities – Athens and Corinth, however, show an increase in hazard, and one is immediately reminded of the Athens 1999 and Corinth 1981 earthquakes, while Heraklion, Patras, Rodhos, and Thessaloniki show a decrease. But how do the boundaries of the newly determined seismic hazard zones relate to the surrounding countries? Edge-effects at the edge of analysis in Asian Turkey and the Black Sea leave this area open for future work whereas the "high" zones in the Greek Seismic Code map can be seen to extend clearly into Macedonia and Bulgaria. One can only hope that internal detail and trans-frontier detail in such maps will help insurers and those with both national and international interests in earthquake loss reduction to a fuller understanding and awareness of the benefits, difficulties and ongoing scrutiny appropriate to seismic hazard zoning issues.

A new seismic hazard map in which the contours show expected maximum peak ground acceleration (cm s-2) for a mean-return period of 475-years



Further maps and related information can be found at:

http://www.sciencedirect.com/science?_ob=GatewayURL&_origin=AUGATEWAY&_method=citationSearch&_piikey=S0267726102001550&_version=1&md5=5894c2a928b22cf495227c20b4f590c9

Paul W. Burton, Benfield HRC Seismic Risk Group and University of East Anglia, p.burton@uea.ac.uk

News in Brief

Climate change afternoon conference: 10th July at the Said Business School, Oxford

The South East Climate Change Partnership is one of the regional groups active on impacts and adaptation throughout the UK and works closely with UKCIP. Their members range from regional, county & local government, to national agencies, water companies and NGOs. The theme for their afternoon conference this year is the impacts of climate change on planning, insurance and property in the South East. It will be chaired by their President & popular broadcaster, John Craven.
Professor David Crichton, of the Benfield Hazard Research Centre, will be speaking on the insurance aspects of climate change.

For more details, see:
www.climatesoutheast.org.uk

or contact Mark Goldthorpe at:
mark.goldthorpe@climatesoutheast.org.uk

Benfield HRC links up with ReSART

Benfield HRC has signed a Memorandum of Understanding with ReSART - the UK-based Reconnaissance, Search and Rescue Team. The ReSART remit is to respond to natural and technological disasters, wherever they occur and whenever help is requested. The link-up will bring together Benfield HRC's expertise and experience in preparedness, including hazard and risk evaluation, monitoring and forecasting, and ReSART's crisis management, development, and rehabilitation knowledge and skills. The MoU will allow for cooperation between the two organisations in the mission to improve the level of disaster preparedness and response, both within the UK and internationally. It will also allow the signatories, where appropriate, to share resources, intelligence, and experience to provide best value in the arena of disaster preparedness and response.

To find out more about ReSART contact info@resart.org

Benfield HRC on Mars

On 2 June at 18:45 BST, the launch window opens for Europe's first mission to Mars. The Mars Express orbiter, together with the Beagle 2 lander, is due to soar above the steppes of Kazakhstan on a Soyuz-Fregat rocket. The launch window lasts until 21 June and the arrival at Mars is at Christmas 2003. UCL-MSSL scientists are eagerly awaiting the launch for three reasons: they are involved in instruments on both the lander and orbiter - and they wish to study water in the Martian environment.

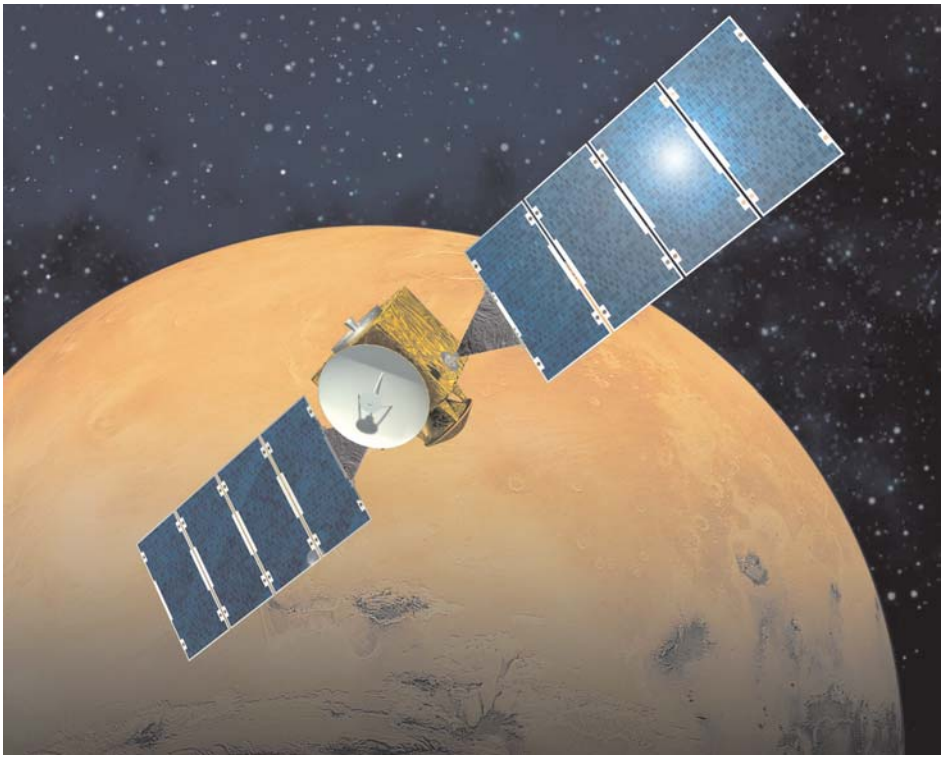
Water is important on Mars as it is a key ingredient for life. Scientists think that 3.8 billion years ago Mars had flowing water on the surface, a thick atmosphere and a protecting magnetic shield like the Earth's. Now, all that is gone and Mars is dry and barren, has a thin carbon dioxide rich atmosphere, and has no large scale magnetic field. Recent discoveries by other spacecraft, however, have shown that there may still be water, probably in the form of permafrost, within a metre of the surface in the Martian polar regions. There may even be water covered by snow packs on the surface. All this points to better conditions for life on Mars 3.8 billion years ago - and a very slim chance now too.

Benfield HRC associate, Andrew Coates, UCL-MSSL's lead scientist for both Beagle 2 and Mars Express says 'We are in a pivotal position to look for water on Mars at UCL, as we are one of only very few scientific groups involved in both lander and orbiter. With our stereo camera system on the surface we will look for water in the atmosphere, and our involvement with an experiment on the orbiter will allow us to measure how quickly water escapes from the atmosphere, scavenged away by the solar wind. Combined with other instruments on the orbiter which can look for water up to 5km under the surface, Europe is going to make vital new discoveries about water on Mars with this mission. We will have a key role in this'.

UCL-MSSL lead the international stereo camera team for the Beagle 2 camera. These are the 'eyes' of Beagle 2 - and as well as making three dimensional maps of the landing site, vital for Beagle's other instruments, the cameras will study the Martian geology, measure water and dust in the atmosphere and even do some astronomy. Images soon after landing will help scientists steer by the stars as they locate the lander precisely on the surface. Building for the surface of Mars has been a challenge. Stereo camera system project manager Andrew Griffiths says 'Our cameras and filter wheels will have to survive huge temperature swings, from -100 to 0 degrees C between night and day on the surface. We also have to cope with dust and have installed, and tested, windscreen wipers for the cameras to reduce this. Everything is working fine and we can't wait for Beagle 2 to land on the surface'.

UCL-MSSL is also co-investigator on the ASPERA experiment on the orbiter. This will measure how much material escapes from the Martian atmosphere at present. This can then be extrapolated back 3.8 billion years to understand whether the solar wind scavenging is sufficient to explain Mars' atmospheric loss since then.

Andrew Coates, Associate, Benfield HRC,
ajc@mssl.ucl.ac.uk. *For more information go to:*
http://www.mssl.ucl.ac.uk/www_plasma/homepage.html



Mars Express Orbiter. Courtesy ESA

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Comment

How should one begin to understand the tragic collapse of a school dormitory in Bingol, Turkey that killed 84 sleeping school boys? The basic question is why again and again, even in affluent, industrial countries such as Italy and in middle-income developing countries such as Turkey, with a great wealth of engineering and other expertise, school buildings collapse in moderate earthquakes.

Turkey, an aspirant to membership in the EU, should have every - that is EVERY - school and school dormitory in the country inspected and, where necessary, reinforced. Of course, Italy – an EU member - has not done this. One recalls that in November 2002 in San Guilano di Puglia (in Italy's south-central region of Molise), primary school children died in a moderate earthquake. A second storey had been improperly added to the school house, and the new concrete slabs fell in on the teachers and children.

Southern Italy and southeastern Turkey have in common not just their "isolation" and "rural poverty" but a long, long history of discrimination and uneven spatial development. Capitalism has developed on the bedrock of historical patterns of regional discrimination and exploitation. In the case of Bingol, one has only to consider the tragic history of the Kurds - an ethnic group divided presently among Turkey, Syria, Iraq, and Iran - to begin to trace today's tragedy back to its root causes. Poor farmers near Bingol had no other option than to send their sons to this boarding school if they wanted them educated.

From such historical root causes as oppression, one can move analytically forward to consider current dynamic pressures at work in the economics and politics of Turkey, the region, and the world. Economic crisis is bound to have influenced the amount of money available for constructing the school dormitory that collapsed in Bingol as well as the amount of professional supervision that project received. The collapsed dormitory was built in 1998. Proper standards, materials, and construction techniques should have been used, which would have ensured that the building withstood the Richter Magnitude 6.4 quake. What has come to light is that the builder used poor materials and shoddy construction methods. Turkey's Prime Minister has pledged a crack down on such building practices, which contributed to a far greater tragedy in 1999 when 18,000 lives were lost during the Izmit quake, and which could bring about a catastrophe when the next earthquake strikes Istanbul, probably within the next decade or two.

Ben Wisner, bwisner@mail.bucknell.edu

For more on this subject go to: RADIX at: http://online.northumbria.ac.uk/geography_research/radix

Above average atlantic hurricane activity forcast

The Benfield HRC-led TSR (Tropical Storm Risk) consortium anticipates, in its May forecast update, that the 2003 Atlantic hurricane season will see above average activity, both for basin numbers (see below) and for US and Caribbean landfall.

Hurricanes	Intense hurricanes	Tropical storms
7 (± 2.0)	2.8 (± 1.5)	12.4 (± 2.7)

The forecast spans the period from June 1st to November 30th, and employs data through to the end of April 2003. Predictors used are the forecast July-September 2003 trade wind speed over the Caribbean and tropical Atlantic, and the forecast August-September 2003 sea surface temperature in the tropical north Atlantic. Currently, TSR anticipates the Atlantic SST anomaly to be near neutral and the trade wind anomaly to have a moderate enhancing effect on activity.

For a more detailed forecast go to: www.benfieldhrc.org

For further information about TSR contact Mark Saunders at: mas@mssl.ucl.ac.uk

Comments and suggestions for future newsletter contributions should be sent to the editor:
Anna McGuire: anna.mcguire@ucl.ac.uk

Benfield Hazard Research Centre
Department of Earth Sciences
University College London
Gower Street, London,
WC1E 6BT, UK
Web-Site: www.benfieldhrc.org
Tel: +44 (0)20 7679 3637
Fax: +44 (0)20 7679 2390