

## **Plenary Lecture on Ocean acidification over the next 100 years: implications for marine ecosystems**

**Dr Richard A. Feely, NOAA Pacific Marine Environmental Laboratory, USA**

### **Abstract**

Carbon dioxide (CO<sub>2</sub>) is one of the most important “green-house” gases in the atmosphere affecting the radiative heat balance of the earth. As a direct result of the industrial and agricultural activities of humans over the past two centuries, atmospheric CO<sub>2</sub> concentrations have increased more than 100 ppm. The atmospheric concentration of CO<sub>2</sub> is now higher than experienced on Earth for at least the last 800,000 years, and is expected to continue to rise, leading to significant temperature increases in the atmosphere and oceans by the end of this century. The global oceans are the largest natural long-term reservoir for this excess heat and CO<sub>2</sub>, absorbing approximately 85% of the heat and 30% of the anthropogenic carbon released into the atmosphere since the beginning of the industrial era. Recent studies have demonstrated that both the temperature increases and the increased concentrations of CO<sub>2</sub> in the oceans are causing significant changes in marine ecosystems. Many marine organisms are already affected by these anthropogenic stresses, including impacts due to ocean acidification. The present and future implications of ocean acidification on the health of our ocean ecosystems and related ocean-based economies will be discussed at the lecture.

### **Biography**

Dr Richard A. Feely is a Senior Fellow at the NOAA Pacific Marine Environmental Laboratory in Seattle. He also holds an affiliate full professor faculty position at the University of Washington School of Oceanography. His major research areas are carbon cycling in the oceans and ocean acidification processes. After a BA in chemistry from the University of St. Thomas, in St Paul, Minnesota in 1969 he moved on to Texas A&M University, receiving here an MS degree in 1971 and his PhD in 1974. Both of his post-graduate degrees were in chemical oceanography. Dr Feely is co-chair of the U.S. CLIVAR/CO<sub>2</sub> Repeat Hydrography Program and also a member of the Steering Committee for the International Ocean Carbon Coordination Project. He is a member of the American Geophysical Union and the American Association for the Advancement of Science. Dr Feely has authored more than 230 refereed research publications. In 2006 he was awarded the Department of Commerce Gold Award for his research on ocean acidification. In 2007, Dr Feely was elected to be a Fellow of the American Geophysical Union. In 2010 he was awarded the Heinz Award for his pioneering research on ocean acidification.