Insight into Ocean Colour for NASA Satellites

A swath of new instruments were debuted during a 25-day expedition across the Pacific exploring a wide variety of oceanic ecosystems. The focus of chief scientist Dr Ivona CetiniÄ‡, USRA/NASA, and her multidisciplinary team of oceanographers, engineers, biologists and computer scientists was to explore ocean particles and, more specifically, the tiny phytoplankton that make up the base of the food web. These important organisms are difficult to study in the lab, making the opportunity to observe them at sea critical.

The research will allow the science team to learn how plankton and other living things in the ocean contribute to global climate. The team will use the collected information to ground-truth satellite observation of ocean colour (influenced by phytoplankton), and better understand the processes each planktonic community carries out with regards to the carbon and nitrogen cycles.

New instruments such as the time-lapse sediment trap camera and the holographic camera worked successfully to provide a new way to collect imagery and data about particle size distribution. The NASA-funded FERPS-particle sizer, obtained continuous information about the size of microscopic particles in the ocean for the first time. The high resolution imagery also provided new insight, collecting over one million images and over two billion hyperspectral continuous optical data, which will assist the development of mathematical formulae to distinguish types of phytoplankton using the next generation of satellites (such as NASA's upcoming PACE mission). Data collected during the expedition was visualised in near-real-time Virtual Reality also for the first time; allowing scientists to immerse themselves in the data.

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