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**Primary Production - One Ten East Log**

01 June 2019



*RV Investigator*

*One Ten East Logs from the IIOE-2 voyage aboard RV Investigator will be posted on the WAMSI website during the month long voyage.*

*The sun is shining, the nets are being pulled in and out and life is good aboard RV Investigator. - Captain Micheline Jenner*

**Log from One Ten East**

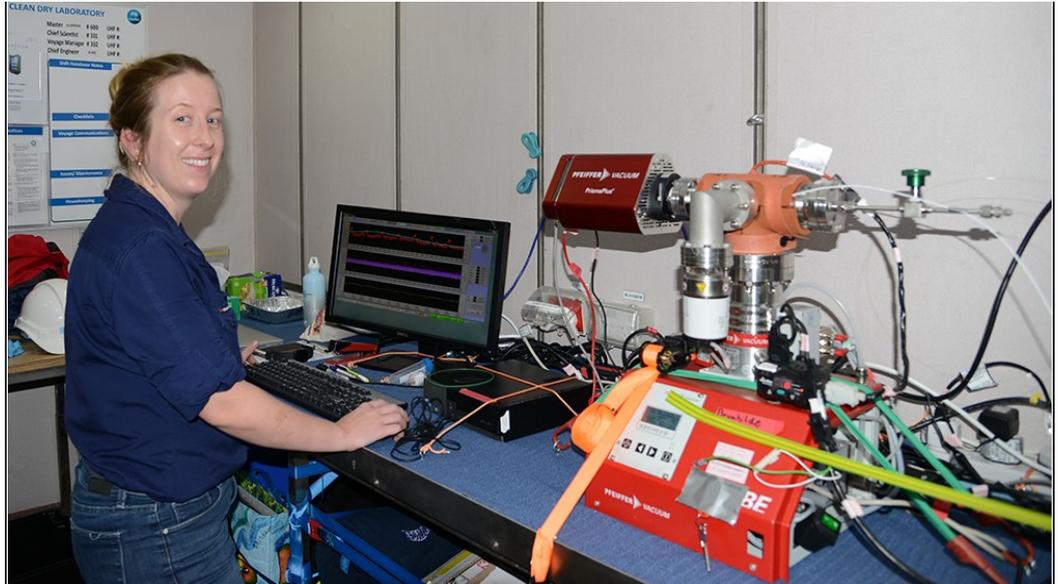
The *RV Investigator* is currently undertaking oceanographic research along the 110°E meridian off Western Australia as part of the second International Indian Ocean Expedition. The voyage is led by Professor Lynnath Beckley of Murdoch University and the research is supported by a grant of sea time on *RV Investigator* from the CSIRO Marine National Facility.

Date: June 01, 2019	Time: 1200 AWST
Latitude: 17°S	Longitude: 110°E
Wind direction: ESE	Wind speed: 25 knots
Swell direction: SE 2 m	Depth: 5634 m
Air temperature: 27°C	Sea temperature: 27°C
Notes: Cooling breezy trade winds and white caps on the ocean today!	

**Primary Production**

By David Antoine

Every year in the contemporary ocean, phytoplankton use energy from the sun to take up carbon, nutrients and trace elements, and to transform it into a staggering amount of about 50 billion tons of organic matter. This is referred to as the oceanic net primary production (NPP), and is equivalent to the annual production of terrestrial plant ecosystems. NPP is commonly expressed in grams of carbon fixed per unit time and ocean surface area, e.g., a daily production in grams of Carbon per square metre. Oceanic NPP is thus a major component of the global carbon cycle, because part of the carbon taken up by phytoplankton is balanced by a flux of carbon dioxide (CO<sub>2</sub>) from the atmosphere to the ocean. This, combined with the transfer of organic matter (carbon) towards the deep ocean, make up what is referred to as the oceanic biological pump of carbon.



*Dr Charlotte Robinson (Curtin University) uses an AC-S spectrophotometer to determine primary production in the continuous flow-through seawater from a sub-surface intake on the RV Investigator. Photo: Micheline Jenner AM.*

On the RV *Investigator* voyage primary production of phytoplankton from different depths of the ocean is being measured using incubations with radioactive Carbon<sup>14</sup> in a photosynthetron. These estimates of primary production will be compared with those determined during the first International Indian Ocean Expedition 60 years ago.



*Dr Charlotte Robinson (Curtin University) in the modular Isotope Container aboard the RV Investigator, conducting primary production studies with the photosynthetron at different light levels. Photo: Micheline Jenner AM.*

Be sure to follow the daily posts of our One Ten East Logs from the IN2019\_V03 aboard RV *Investigator* at <https://ioe-2.incois.gov.in> and [www.wamsi.org.au](http://www.wamsi.org.au).



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