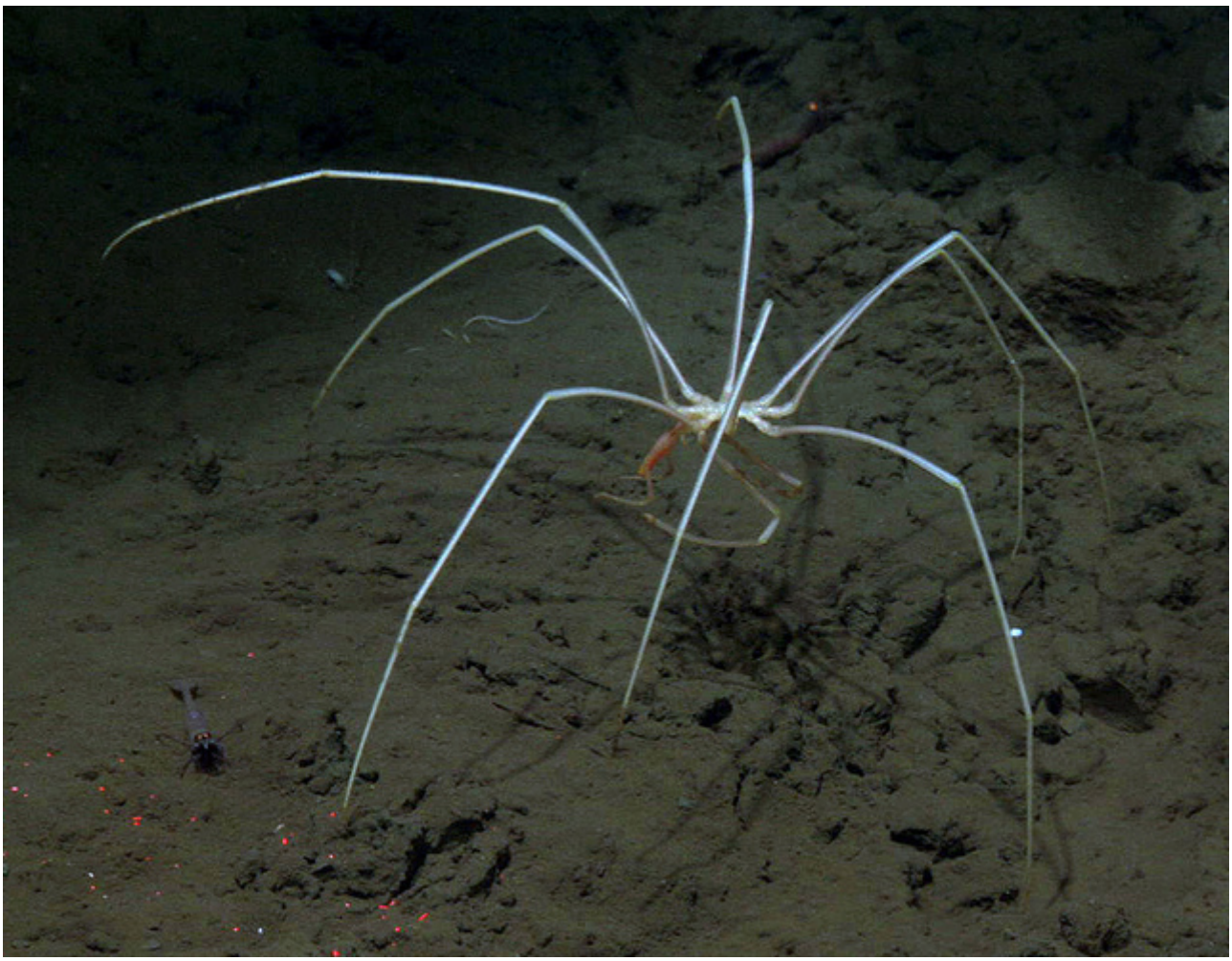
# Introduction to Cascadia Basin [1]

Submitted by Martin Heesemann Tue, 2013-08-13 14:41

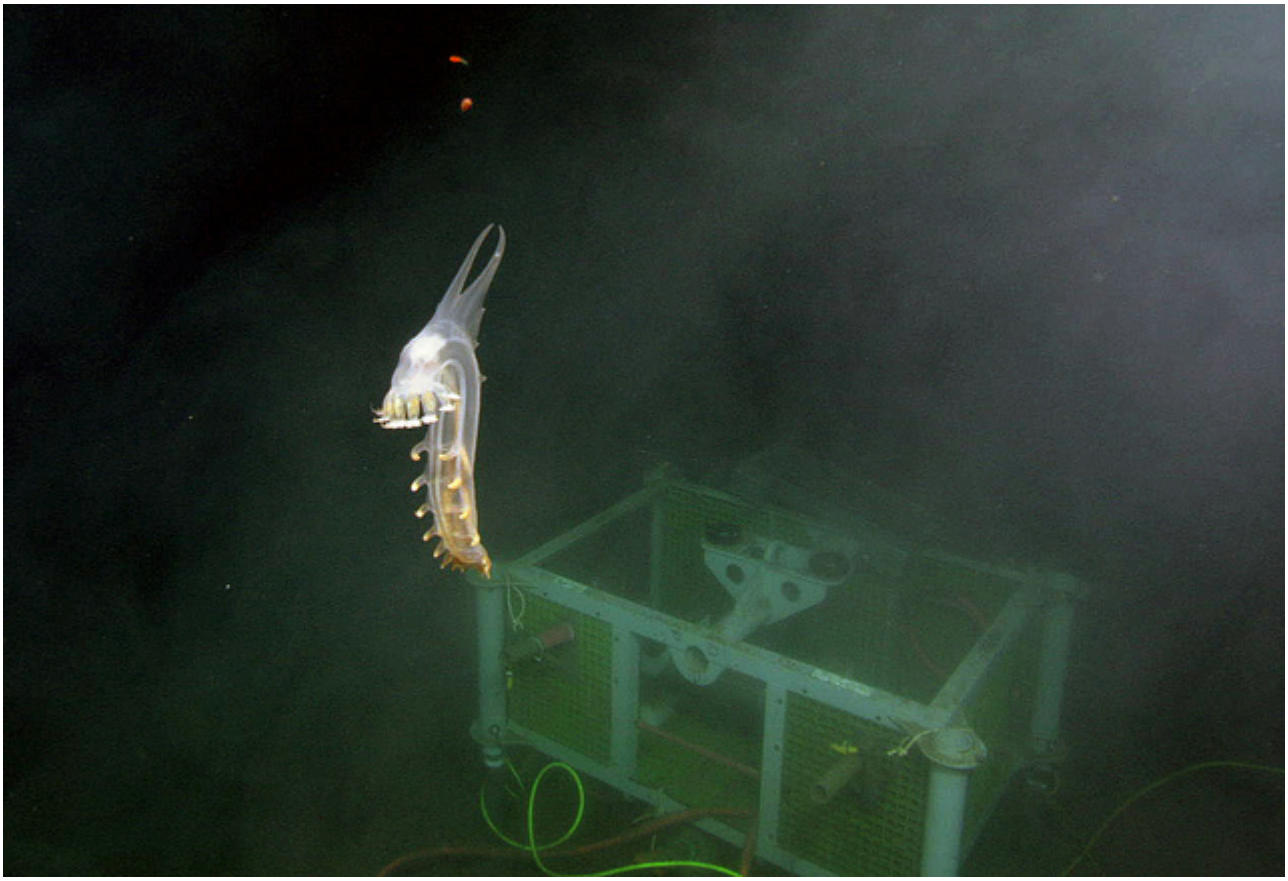


[2]

## Cascadia Basin at a Glance:

- **Region**: Located in the centre of Cascadia Basin?a heavily sedimented abyssal plain region, which extends from the base of the continental margin to the mid-ocean ridge.
- **Number of Instrument Platforms**: 1
- **Depth**: 2660 m
- **Location**: Latitude: 47°46? N, Longitude: 127°46? W

- **Seafloor Composition**: Fine-grained pelagic sediment
- **Principal Research**: Transport of fluids, chemicals and heat in the oceanic crust, tsunami propagation, benthic ecosystems, microbial life in deep sediments and the upper oceanic crust



[3]

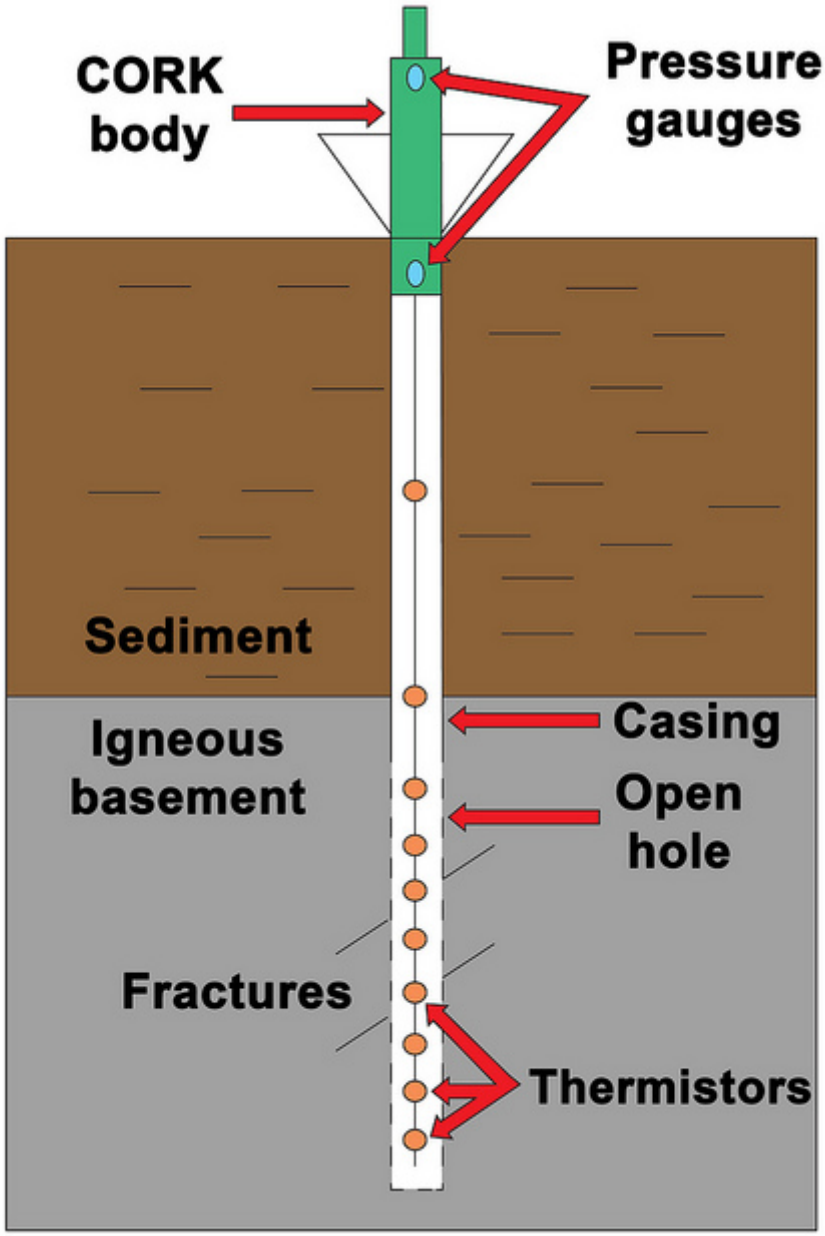
# Environment/Ecosystems:

The abyssal plain is an exceedingly vast environment, covering more than 50% of the planet?s surface. Seemingly inhospitable, with temperatures below 2°C, high-pressure, and a total absence of light, the Cascadia basin is nevertheless home to an assortment of well-adapted organisms.

Depending on marine snow?the continuous shower of mostly organic detritus falling from surface waters kilometers above?little is known about the complicated food web connecting the organisms of the deep. Further, so few organisms have been described that we are now only just scratching the surface of deep-sea biology and ecology.

Life in the abyss is not as abundant is in highly productive coastal upwelling zones or hydrothermal vent fields [4]. Nevertheless, the use of deep diving manned and remotely operated submersibles , has enabled the identification of high diversity of marine organisms, both on the sediments of the abyssal plain and in the water column above.

The fractured volcanic rocks of the upper oceanic crust are the largest aquifer on the planet. Placed in the vicinity of instrumented boreholes that monitor the oceanic crust beneath a more than 200 m thick blanket of sediments, ONC?s Cascadia Basin site is an ideal location to study the flow of fluids in the oceanic crust.




While surveys of the marine life are ongoing, the vast majority of the research at the Cascadia Basin observatory revolves around the physical sciences and seafloor stability [5], a selection of the research, much of which is shared with the larger network of ONC observatories, is provided below.

- **The Seismograph Network**, led by Gary Rogers, uses four broadband/strong motion seismographs and four short period seismographs to study subsea earthquakes and other tectonic activity.
- **Ocean Crustal Hydrogeology project** led by Kelin Wang and Earl Davis utilizes boreholes drilled across the Juan de Fuca tectonic plate to help reveal the relationship between dynamic processes such as episodic plate motion, internal plate strain, and earthquakes.
- **West Coast ?Tsunami-Meter?** is led by Richard Thomson studying the generation, propagation, transformation, run-up, and dissipation of tsunamis and other long waves, to enhance our knowledge of them, and predictive capability against them.

Blog Highlight Links:

Piezometer installed [6] at ONC?s Cascadia Basin

Cables laid [7] at ONC?s Cascadia Basin:

Instrument platform [8] installed at ONC?s Cascadia Basin:

Video Links:

Rattail fish [9] at ONC?s Cascadia Basin

Striding sea spider [10] at Cascadia Basin observatory

Deploying ROCLS [11] at ONC?s Cascadia Basin

Installing Tsunami sensor array [12] at the Cascadia Basin, with Kate Moran

## Tags:

- tsunami [13]
- hydrology [14]
- hydrogeology [15]
- deep biosphere [16]
- cork [17]
- IODP [18]
- ODP [19]

## Categories:

- Backgrounders [20]

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## Highlights

- Audio
- Data
- Learning

- Science
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## Reading Room

- Active Research
- Backgrounders
- FAQs
- Glossary
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## Cool Stuff

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- State of the Ocean

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