

# TSUNAMI MONITORING SYSTEM



## APPLICATION BACKGROUND

Natural disasters such as tsunamis often occur without warning to people living on or close to the coastline.

In such circumstances, personal injury and death may occur. Any early warning of an approaching tsunami is very important. Wave height sensors can be installed on or under buoys to measure wave activity to determine tsunami events.

Often there will be a central authority which maintains a 24/7 tsunami warning centre on an ocean by ocean basis, so staff at that central authority can have knowledge of an approaching tsunami.

## APPLICATION DETAIL

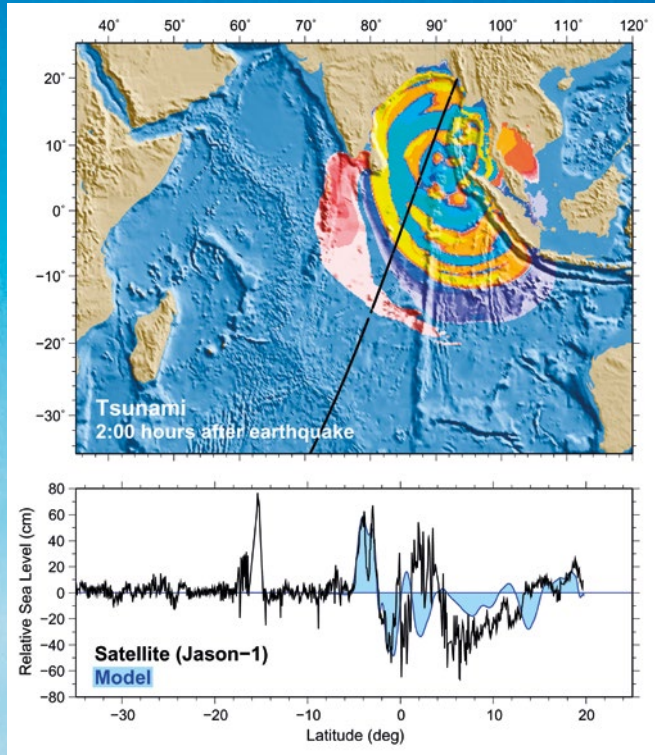
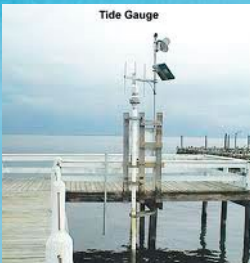
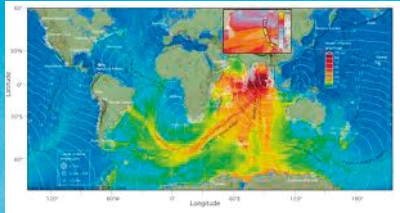
Unidata equipment, primarily Neon Remote Loggers, can be set up with cell phone or satellite internet connections to provide monitoring of wave activity and the real time / near real time transmission of that activity to a central tsunami warning centre for example the Pacific Tsunami Warning Centre (PTWC) in Hawaii.

Wave activity is measured at ocean / coastal buoys, with a submersible sensor typically at 2 meters below the surface of the water. An example is a submersible Druck PI sensor / PTX 1560.

The data collection rate is high, typically 10 times per second (10Hz) and a continuous data stream is sent from the measurement station to a central system, which analyses the spectral components of the depth / period of waves similar to the way seismic data is analysed. This data stream is commonly then sent to one of the ocean wide tsunami warning centres.

The measurement of the wave height is relatively straightforward, however it is challenging to collect this sensor data and also transmit the data out at 10Hz on a continual basis. A high capacity / high speed data logger or RTU is needed. A reasonably high bandwidth link, which is an always available channel, is needed. For close to shore buoys, a 3G cell based system could be used. For ocean buoys, an equatorial satellite system is needed.





## TYPICAL CONFIGURATION

### APPLICATION SPECIFIC INSTRUMENTS/INPUTS

Options	Unidata Part Number	Description
Wave Monitoring Systems	Custom Part	As per customer requirements

### NEON TELEMETRY - NRL / RTU / FIELD UNITS

Options	Unidata Part Number	Description
Ethernet	3016A-000 / 3008A-000	Neon Remote Logger-16 or 8 Analog Ch / Touch Screen Display
Ethernet & 3G/4G	3016A-C00 / 3008A-C00	Neon Remote Logger-16 or 8 Analog Ch / Touch Screen Display
Ethernet & 3G/4G and LoRa	3016A-CL0 / 3008A-CL0	Neon Remote Logger-16 or 8 Analog Ch / Touch Screen Display
Equatorial Orbit Satellite-Inmarsat	3016A-00I / 3008A-00I	Neon Remote Logger-16 or 8 Analog Ch / Touch Screen Display
Equatorial Orbit Satellite-Inmarsat & 3G/4G	3016A-C0I / 3008A-C0I	Neon Remote Logger-16 or 8 Analog Ch / Touch Screen Display
Low Earth Orbit Satellite - Globalstar	3016A-00G / 3008A-00G	Neon Remote Logger-16 or 8 Analog Ch / Touch Screen Display
Satellite - Iridium Short Burst Data	3016A-00R / 3008A-00R	Neon Remote Logger-16 or 8 Analog Ch / Touch Screen Display
Standalone RTU/NRL - Industrial	3004A-00 / 3004A-0L	Neon Remote Logger-4 Analog Ch with or without Touch Screen Display
Cellular RTU/NRL 3G/4G - Industrial	3004AC0 / 3004A-CL	Neon Remote Logger-4 Analog Ch with or without Touch Screen Display
M – Series Standalone RTU/NRL	3004A-M000 / 3004A-M0B0	Neon Remote Logger-4 Analog Ch with or without Li Battery
M – Series Cellular RTU/NRL 3G/4G	3004A-MC00 / 3004A-MCB0	Neon Remote Logger-4 Analog Ch with or without Li Battery
M – Series LoRa RTU/NRL	3004A-ML00 / 3004A-MLB0	Neon Remote Logger-4 Analog Ch with or without Li Battery
M – Series Ethernet RTU/NRL	3004A-MEBL	Neon Remote Logger-4 Analog Ch, Li Battery & LCD are optional
M – Series Microsatellite RTU/NRL	3004A-MHBL	Neon Remote Logger-4 Analog Ch, Li Battery & LCD are optional
M – Series Iridium Short Burst Data RTU/NRL	3004A-MIBL	Neon Remote Logger-4 Analog Ch, Li Battery & LCD are optional

### NEON APPLICATION SOFTWARE - CUSTOMER SERVER

Options	Unidata Part Number	Description
Neon Applications Software	2302A	Neon Server Software Licence Incl 5 NAL
Neon Applications Software	2302A-10	Additional 10 NRT Access Licence
Neon Applications Software	2302A-20	Additional 20 NRT Access Licence
Neon Applications Software	2302A-50	Additional 50 NRT Access Licence

### NEON HOSTING SERVICE - UNIDATA SERVER

Options	Unidata Part Number	Description
Neon Hosting Service	2301A	Neon Data Initial Subscription Setup Fee
Neon Hosting Service	2301A-01	Neon Data Service Fee for 1-50 NRT
Neon Hosting Service	2301A-02	Neon Data Service Fee for 51-100 NRT
Neon Hosting Service	2301A-10	Neon Data Service Fee Metering

### DATALOGGER MANAGEMENT SOFTWARE

Options	Unidata Part Number	Description
Starlog V4 Management Software	6308A-AUE	STARLOG V4 Full Licence Key