Refined Data Products for field wave and current data

Using the DMP, wave and current data from European test centres can be displayed as time-series plots or scatter diagrams. For wave measurements time series plots of important parameters over a given time period, such as significant wave height, which is the average of the 1/3 highest waves in a record, or maximum wave height, can be displayed. Scatter diagrams show the number of occurrences of certain sea states over a given duration. Different sea states are represented by different cells in a matrix and defined by wave height and period.

For current data, time series can be created of important parameters such as current speed and direction.

Further information can be found on the SOWFIA website.

Keep up to date with the SOWFIA project by joining the SOWFIA network on www.sowfia.eu. Access the SOWFIA DMP at: sowfia.hidromod.com.
Why measure waves and currents?

Measurements of wave and current conditions at marine energy test sites are required for many reasons including:

- Environmental monitoring
- Average, seasonal climate analysis
- Available resource assessment
- Planning operations at sea
- Hindcast/Forecast model calibration

Waves

Waves can be measured by in situ and remote-sensing techniques such as:

- **Moored wave buoys**: the most established and robust in situ technique for wave measurements.
- **Acoustic Doppler Current Profilers (ADCPs)**: derive wave characteristics by measuring the orbital velocities of water particles as well as the water level (from pressure and surface returns).
- **High Frequency (HF) radar**: can measure waves remotely from the coast and cover large spatial areas.

Currents

Currents are also measured by in situ and remote-sensing techniques, such as:

- **ADCPs**: estimate averaged current profiles using the Doppler principle in the water column.
- **HF radars**: measure the speed and direction of ocean surface currents over a large region of coastal waters.

Physical monitoring of waves and currents has been carried out at European test centres since 2008. Some of the measurements are available on the Data Management Platform (DMP) created as part of the SOWFIA project (See table).

### Measurements at test centres

<table>
<thead>
<tr>
<th>Test site</th>
<th>Deployment</th>
<th>Apparatus</th>
<th>Data in DMP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wave Hub (UK)</td>
<td>2011 - present</td>
<td>Wave buoy + HF radar</td>
<td>✓ -</td>
</tr>
<tr>
<td>Ocean Plug (PT)</td>
<td>2010 - present</td>
<td>Wave buoy + ADCP</td>
<td>✓ ✓</td>
</tr>
<tr>
<td>SEMREV (FR)</td>
<td>2011 - present</td>
<td>Wave buoy + ADCP</td>
<td>✓ ✓</td>
</tr>
<tr>
<td>AMETS (IR)</td>
<td>2010 - present</td>
<td>Wave buoy</td>
<td>✓ -</td>
</tr>
<tr>
<td>Galway Bay (IR)</td>
<td>2008 - present</td>
<td>Wave buoy</td>
<td>✓ -</td>
</tr>
<tr>
<td>BIMEP (SP)</td>
<td>2009 - present</td>
<td>Wave buoy</td>
<td>✓ -</td>
</tr>
</tbody>
</table>