



Coherent patterns in sea level storminess trends as derived from long-term tide gauge measurements

Ivica Vilibić (1), Jadranka Šepić (1), and Zoran Adam Gaxotte (2)

(1) Institute of Oceanography and Fisheries, Šetalište I. Mestrovića 63, 21000 Split, Croatia (vilobic@izor.hr, 00385 21 358688), (2) Student at Institute of Engineering Sciences of Toulon and Var, Avenue Pompidou, B.P. 56, 83162 La Valette, France

The paper attempts to map global long-term sea level storminess trends and regional coherence patterns, through the investigations of 29 longest worldwide distributed hourly sea level series. Our approach in assessing long-term trends in sea level variability is somewhat different from other approaches, which commonly use the overall extremes and investigate their variability and trends. We split sea level storminess into three frequency bands: (i) small-scale synoptic band (1-3 days), (ii) large-scale synoptic band (3-10 days), and (iii) planetary band (10-100 days), and calculated trends over seasons and annually. The most coherent result we obtained was significant decrease of sea level storminess over the tropical and subtropical Pacific, particularly at the synoptic scale frequencies. Several other coherent regions were found and linked to changes in the global atmosphere. Coherent sea level storminess trends patterns are not persistent over a year, and may vary seasonally. Also, trends at some regions may be significantly dissimilar over different frequency bands. Further analyses and quantitative linking to the atmospheric processes via global reanalysis fields should follow this study.