Plinius Conference Abstracts,
Vol. 11, Plinius11-202, 2009
11th Plinius Conference on Mediterranean Storms

Marine storminess in the Mediterranean in future climate scenarios

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This talk reviews the analysis that is presently available on marine storms, their climatology and change in future climate scenarios. The cyclones that are responsible for the storms are analyzed using a regional climate model simulations of present day (1961-1990) and future (2071-2100, A2 and B2 emission scenarios) and the differences between northern Europe and Mediterranean are discussed. In the A2 and B2 scenarios the annual average storm track intensity increases over the North-East Atlantic and decreases over the Eastern Mediterranean region with respect to present day conditions,. The number of cyclones decreases in future scenarios throughout Europe, except over the central Europe and Mediterranean in summer, where it increases. This overall change pattern is larger in the A2 than in the B2 simulations. Wind-wave field changes are discussed considering a similar analysis. The mean SWH (Significant Wave Height) field over large fraction of the Mediterranean Sea is lower for the A2 scenario than for the present climate during winter, spring and autumn. During summer the A2 mean SWH field is also lower everywhere, except for two areas, those between Greece and Northern Africa and between Spain and Algeria, where it is significantly higher. All these changes are similar, though smaller and less significant, in the B2 scenario, except during winter in the north-western Mediterranean Sea, when the B2 mean SWH field is higher than in the REF simulation. Also extreme SWH values are smaller in future scenarios than in the present climate and such SWH change is larger for the A2 than for the B2 scenario. In general, changes of SWH, wind speed and atmospheric circulation are consistent, and results show milder marine storms in future scenarios than in the present climate.