f041lakgr[001-003]: Lake George (Australia)

Purpose

The purpose of this test is to verify the wave model in a nearly ideal depth-limited wave growth situation.

Situation

Lake George is a shallow lake (depth about 2 m) with a nearly flat bottom (Young and Verhagen, 1996a, 1996b and 1996c). It is approximately 20 km long and 10 km wide (see Figure 1). The bottom is rather smooth (bottom ripples are practically absent) and the bottom material consists of fine clay.

Measurements are taken from eight positions for each case (Figure 1). For these positions energy density spectra are available.

In Table 1 the wind velocity and direction for each case are given. For all three cases, wind conditions have been adapted according to the procedure proposed by Taylor and Lee (1984). The adapted wind conditions can be read from file.

The water level varies with the season. Variations in the water level for each case are given in Table 1.

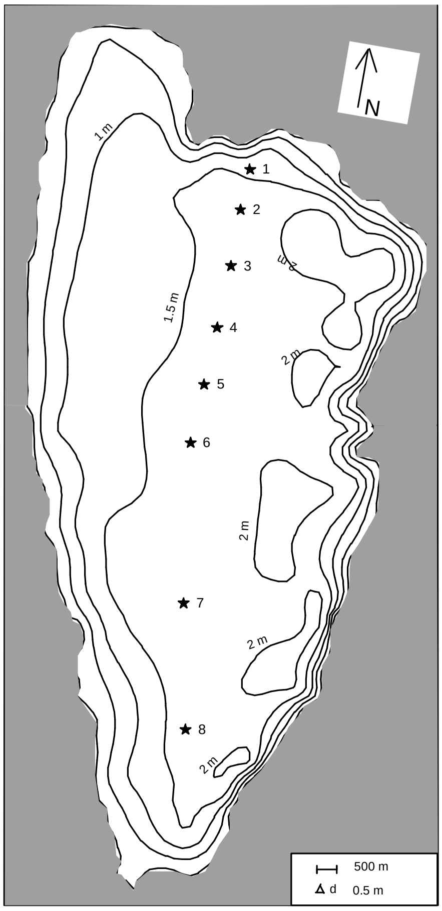

Figure 1 **Bathymetry of Lake George (Australia) with the locations of the eight observation stations**

Case nr.	**Date/Time**	**Water level [m]**	**Wind (U10) [m/s]**	**Direction [°]**
001	19-02-1993 / 22.00 hrs	+.10	6.4 *	344
002	03-10-1993 / 17.00 hrs	+.30	10.8 *	342
003	21-11-1992 / 16.00 hrs	+.27	15.2 *	341

Table 1 **Physical parameters for Case f041lakgr. Wind direction according to nautical convention. (*=Taylor and Lee (1984) adapted wind field is available) Time is local time.**

Comparison

Comparisons are made for energy density spectra, significant wave height H_{m0} and mean wave period T_{m01}.

Default model commands

	COMPUTATIONAL GRID					
	1D/2D	XPC	YPC	ALPC	XLENC	YLENC
	2D	1667	1667	0	11340	17907

	ΔX	ΔY	DIR1	DIR2	Δθ	FLOW	FHIGH	MSC
001	210	175	0°	360°	10°	0.166	2.0	26
002	210	175	0°	360°	10°	0.125	1.0	22
003	210	175	0°	360°	10°	0.125	1.0	22

	PHYSICS								
	GEN	BREAK	FRIC	TRIADS	QUAD	WCAP	REFRAC	FSHIFT	SETUP
	3	on	on	on	on	on	on	off	off

	BOUNDARY CONDITIONS				
	TYPE	BOU	C/V	P/R	NAME OF FILE
001	side	N	con	read boundary from file	'f041lakgr001.bnd'
002	side	N	con	read boundary from file	'f041lakgr002.bnd'
003	side	N	con	read boundary from file	'f041lakgr003.bnd'

	BOTTOM:	WIND:	CURRENT:	WATER LEVEL:
001	'f041lakgr001.bot'	'f041lakgr001.wnd'	-	+0.10 m
002	'f041lakgr002.bot'	'f041lakgr001.wnd'	-	+0.30 m
003	'f041lakgr003.bot'	'f041lakgr001.wnd'	-	+0.27 m

References

Young, I.R. and L.A. Verhagen, 1996a: The growth of fetch limited waves in water of finite depth. Part I: Total energy and peak frequency, *Coastal Engineering*, 29, 47-78

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Taylor, P.A. and R.J. Lee, 1984: Simple guidelines for estimating wind speed variations due to small-scale topographic features, *Climatol. Bull.*, 18, 3-32

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