NSW Estuary Tidal Inundation Exposure Assessment

Appendix B

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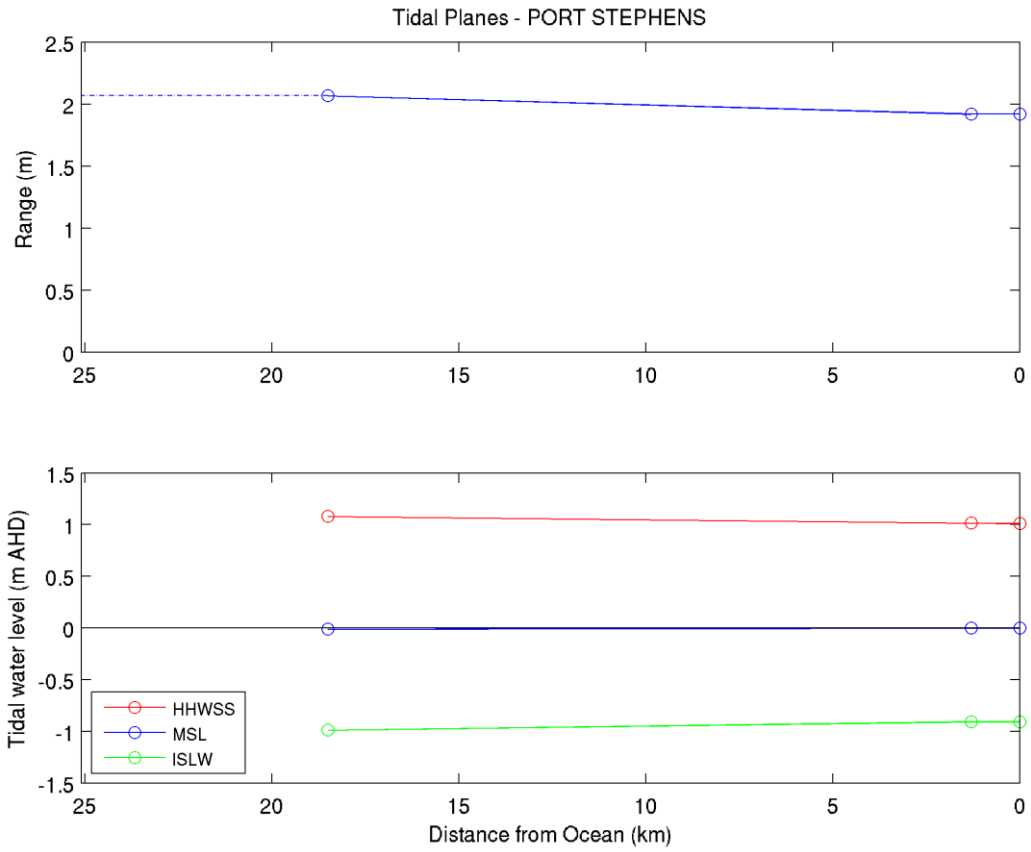

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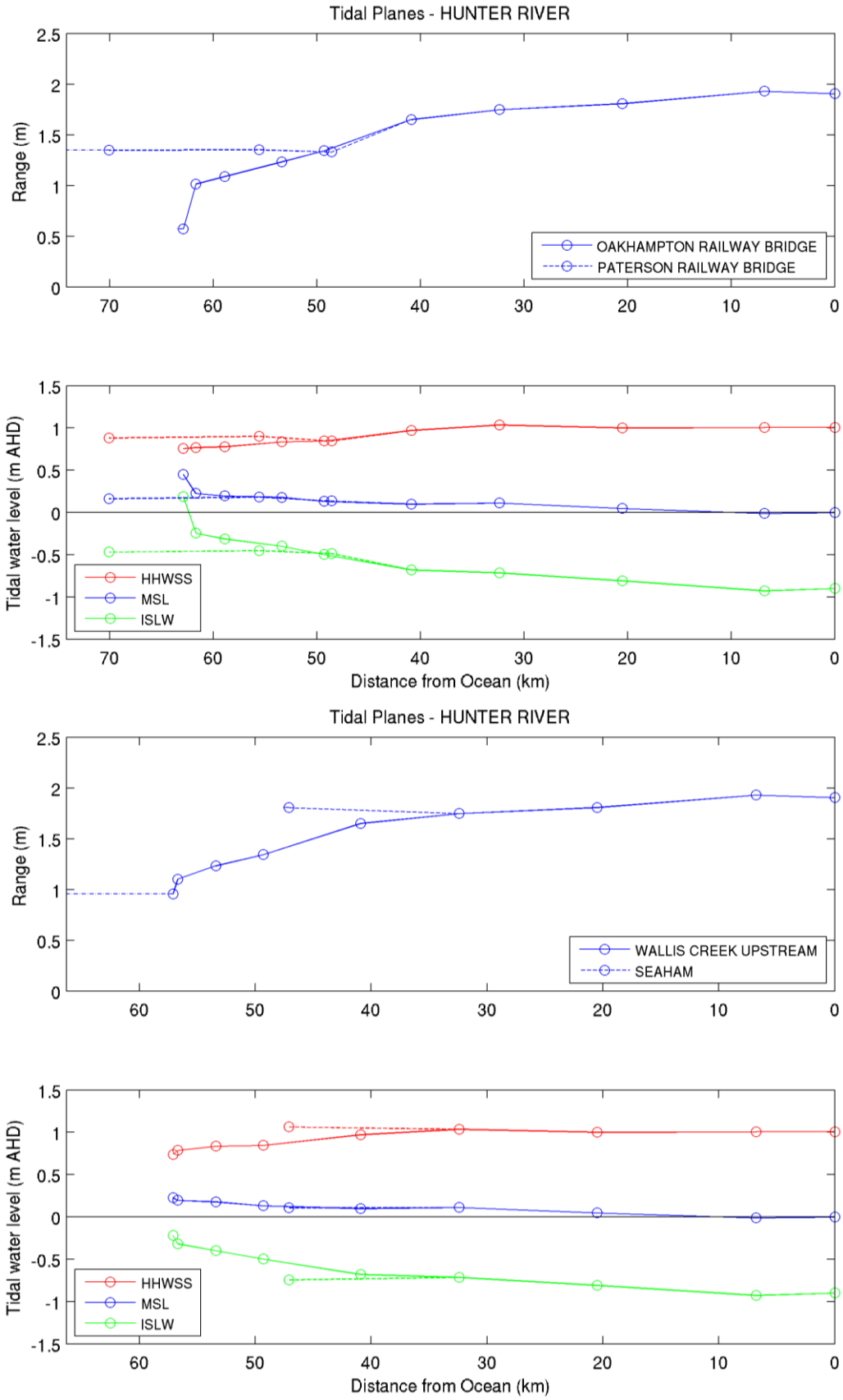

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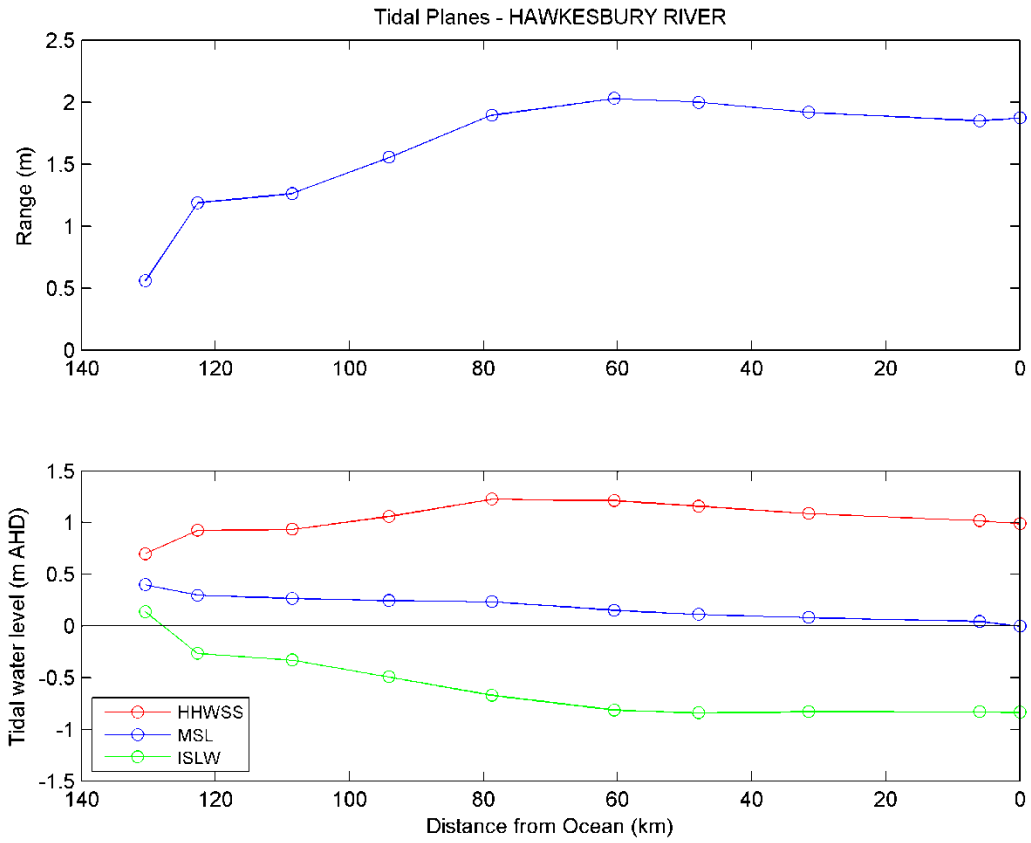

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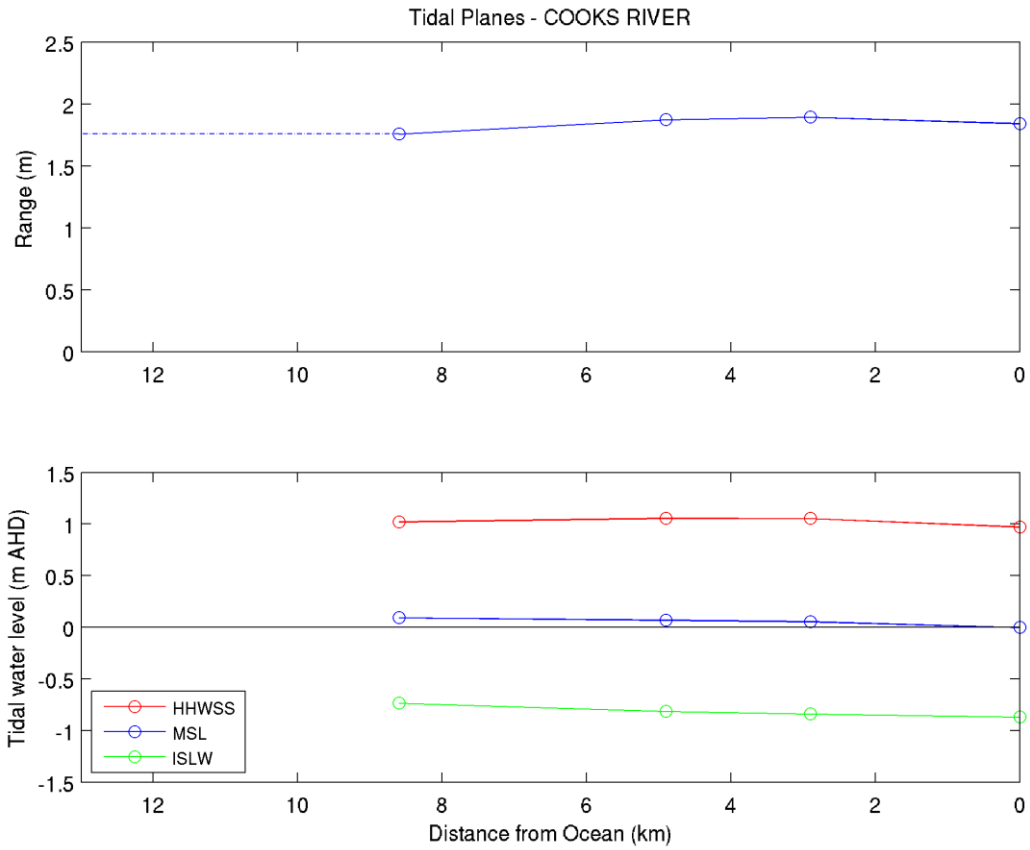

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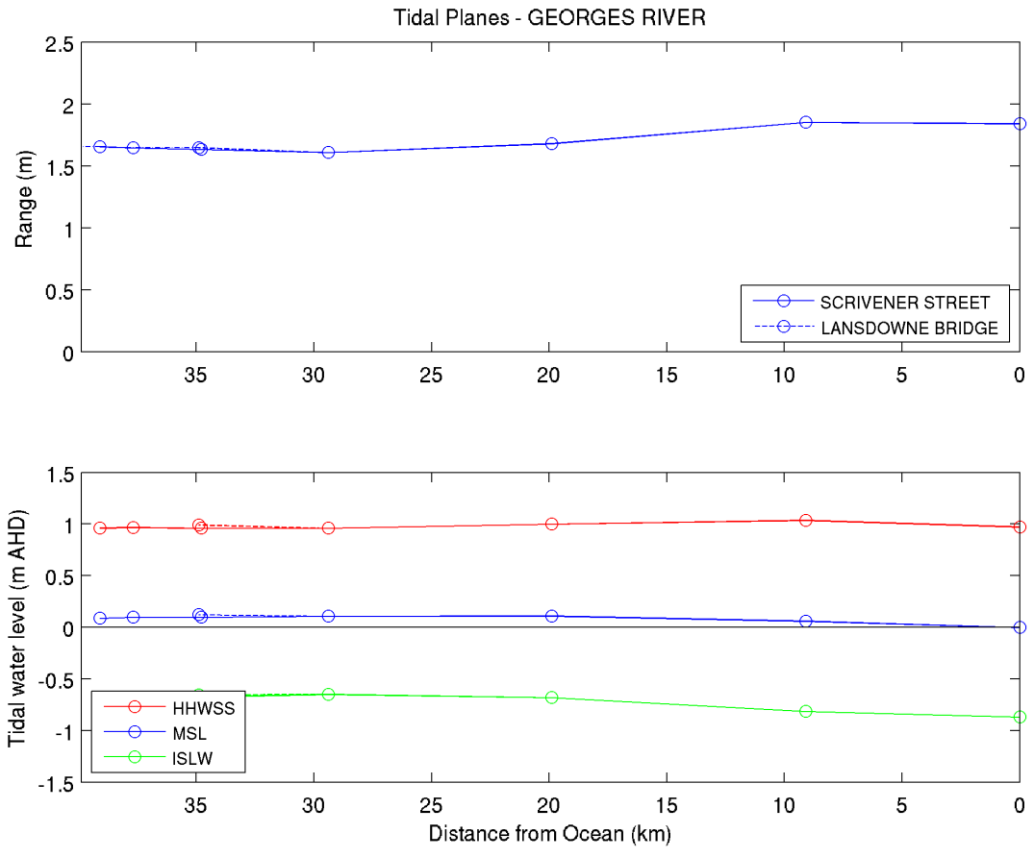

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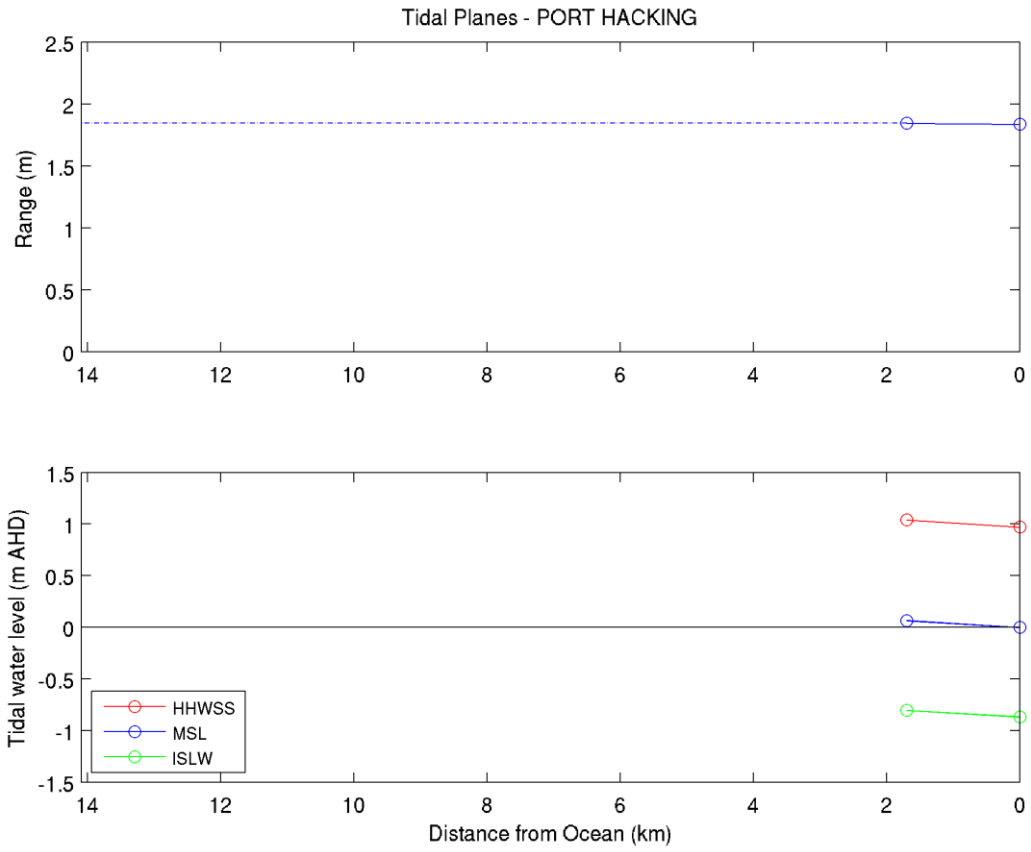

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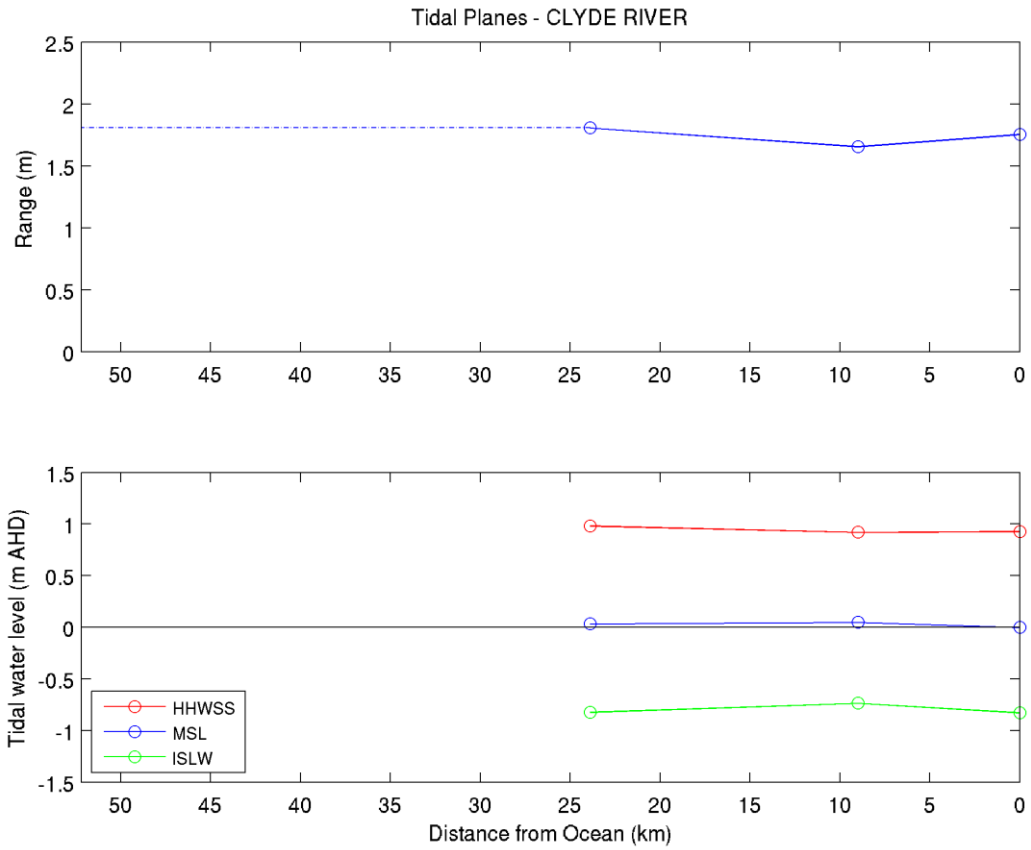

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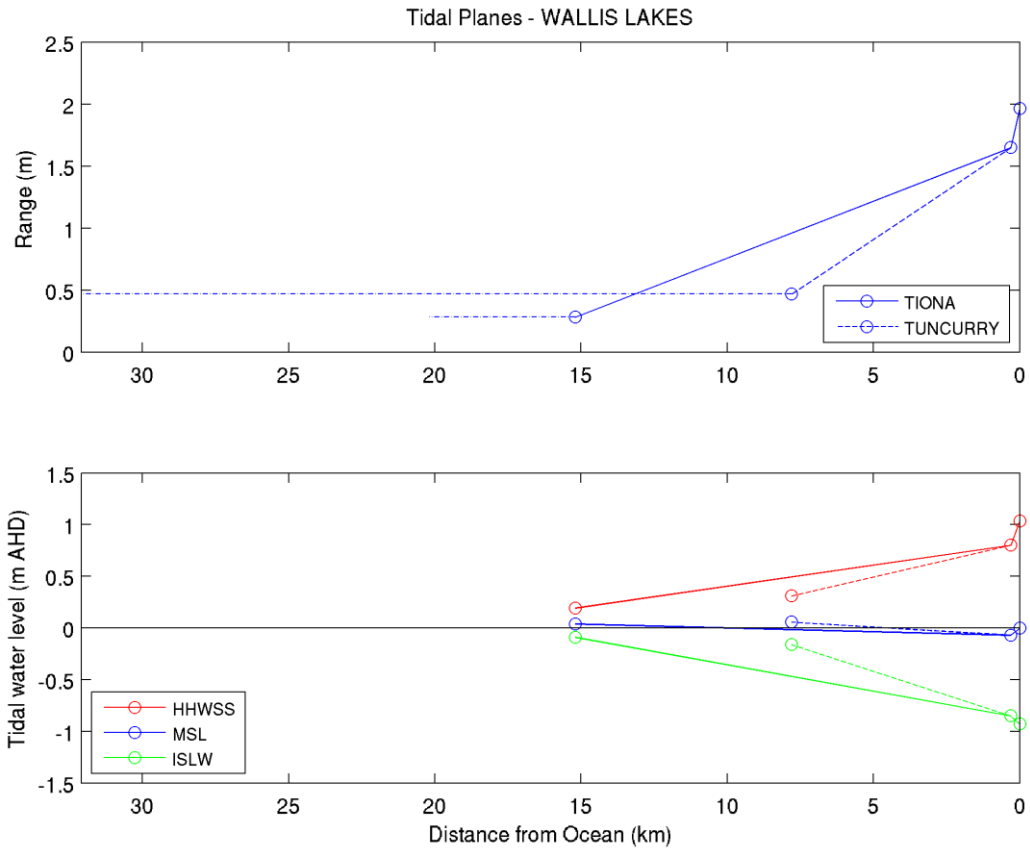

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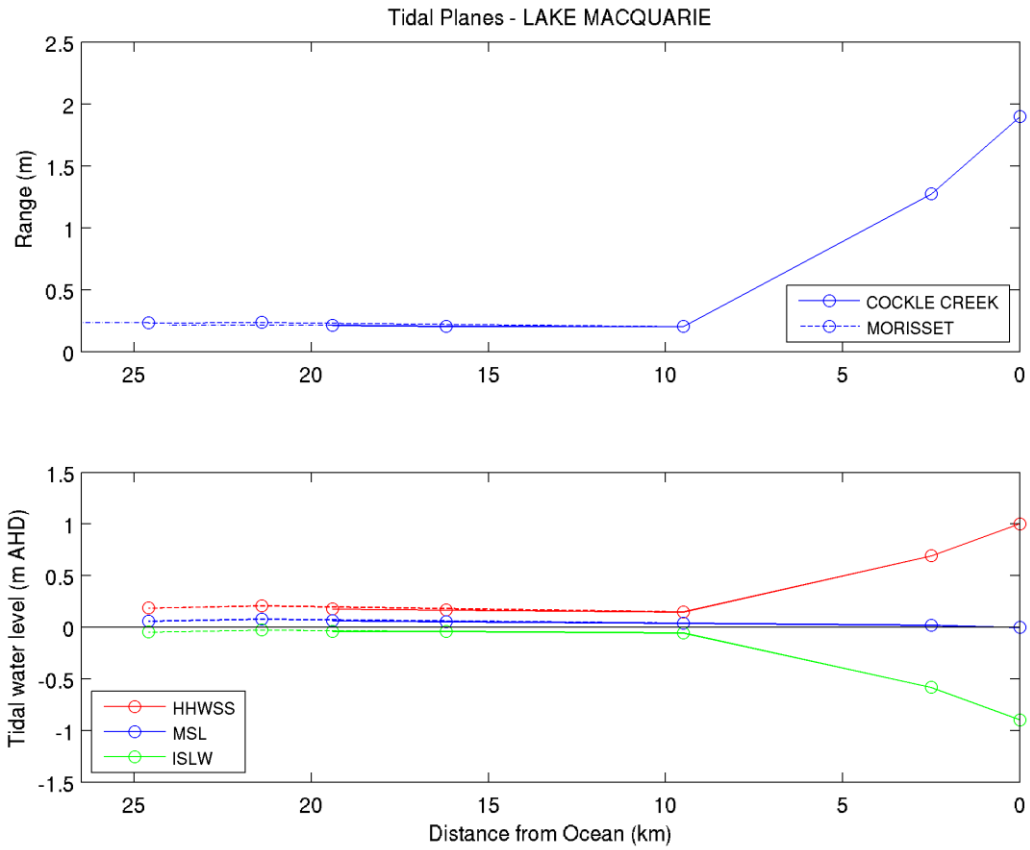

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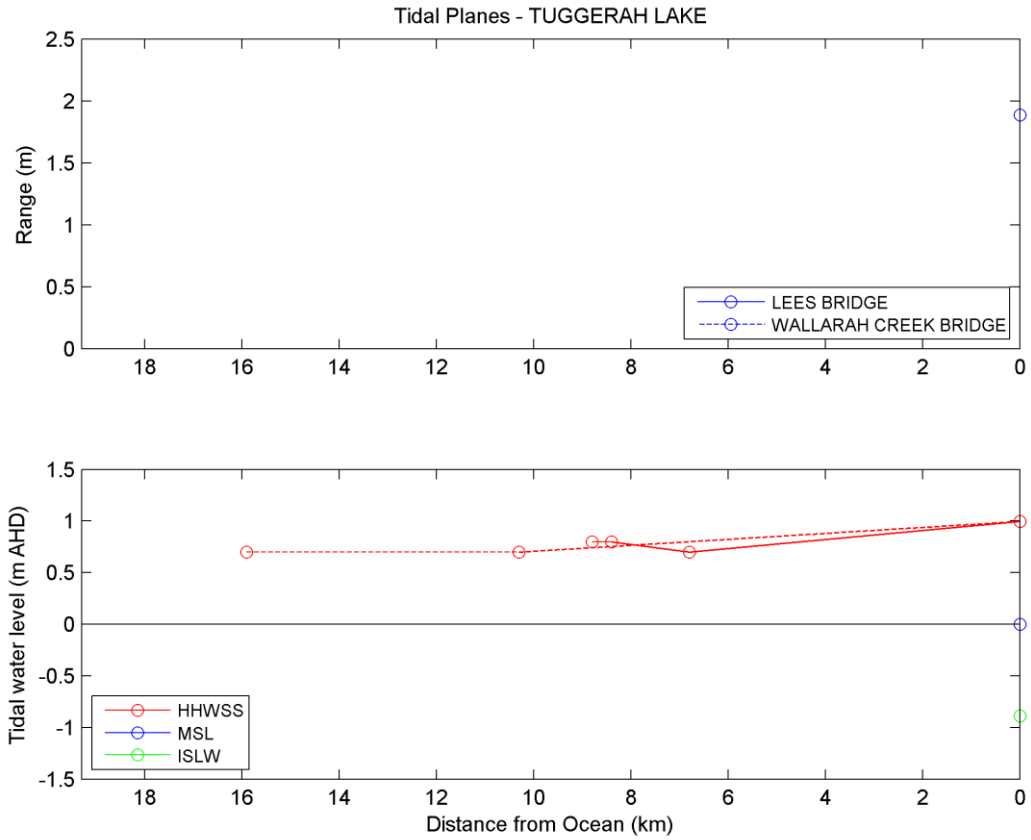

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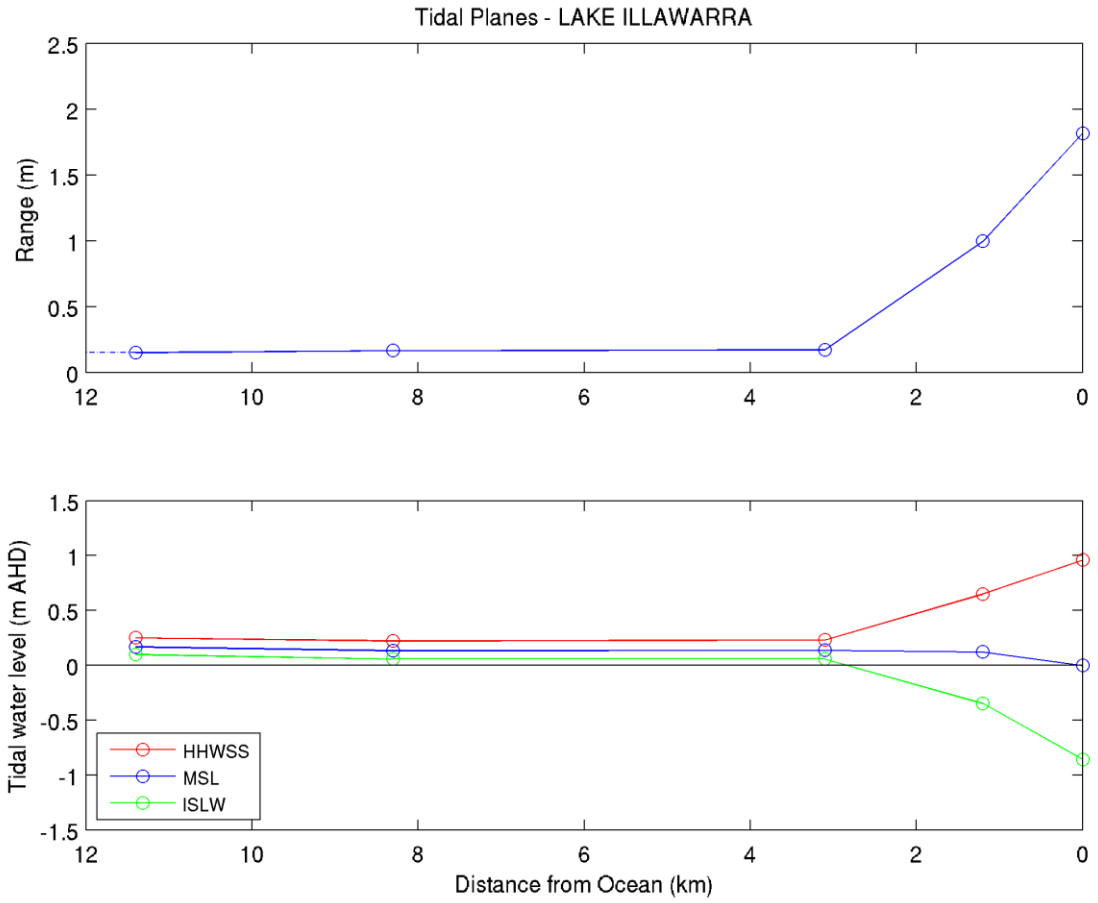

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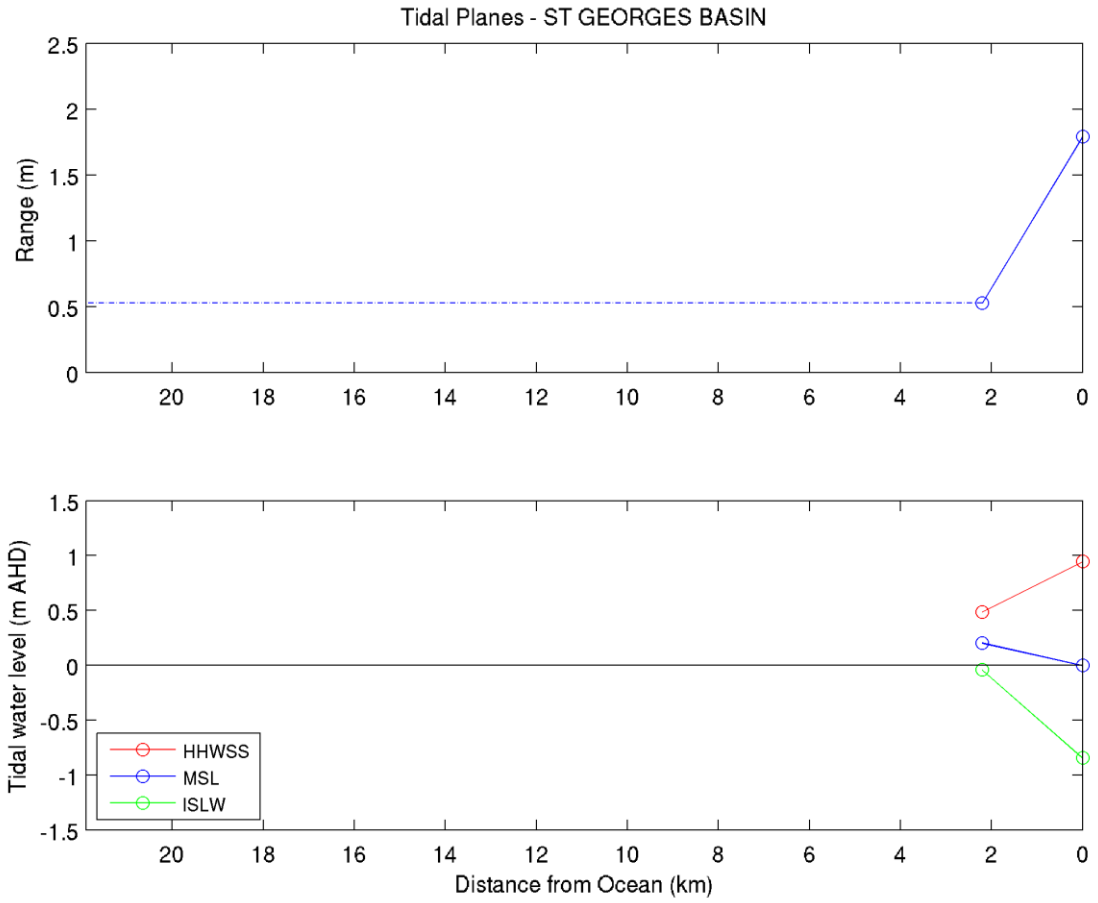

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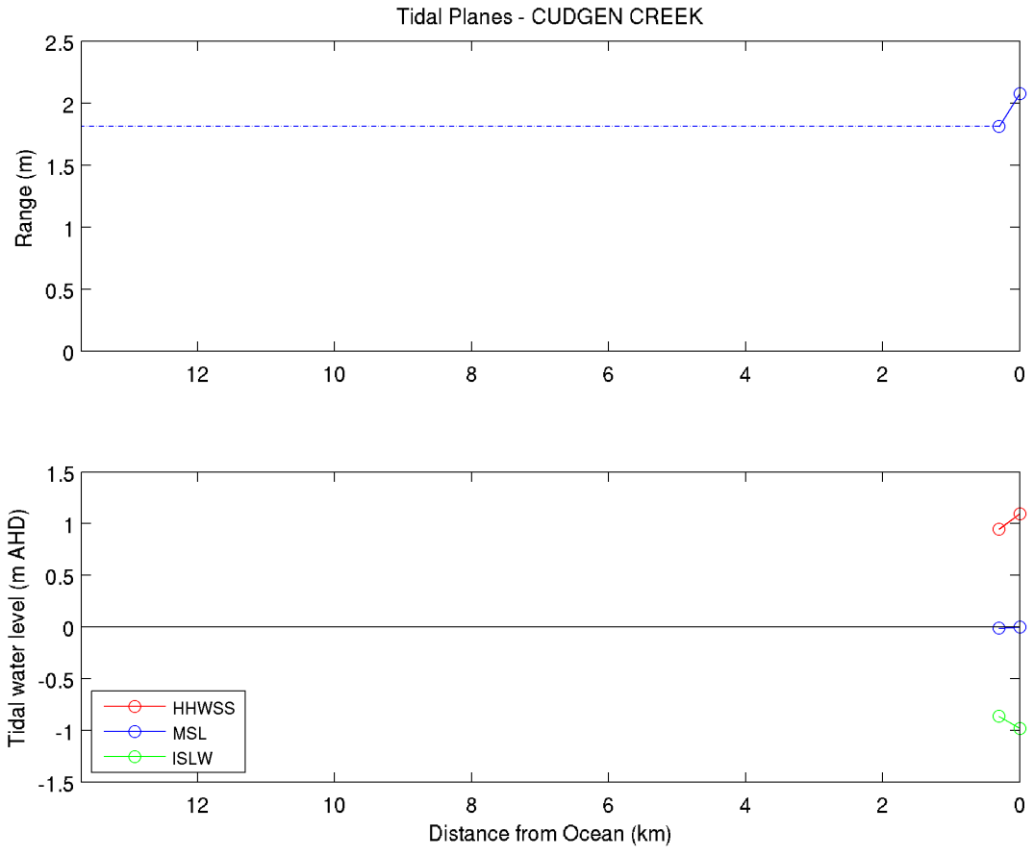

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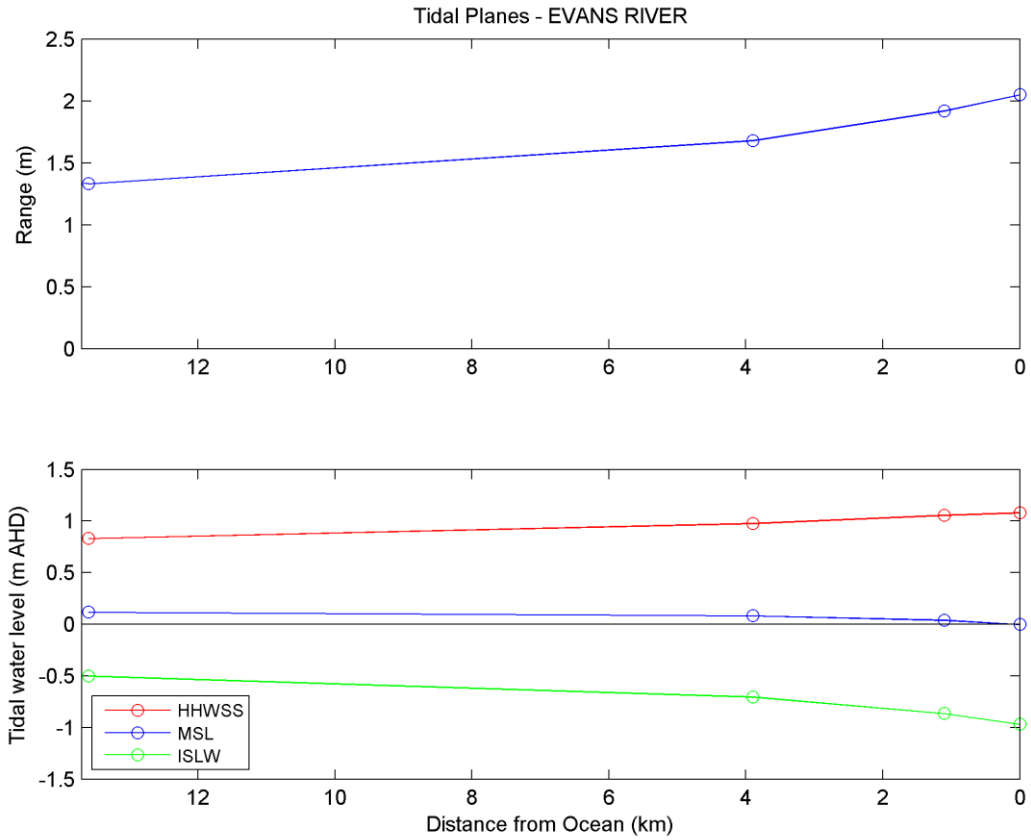

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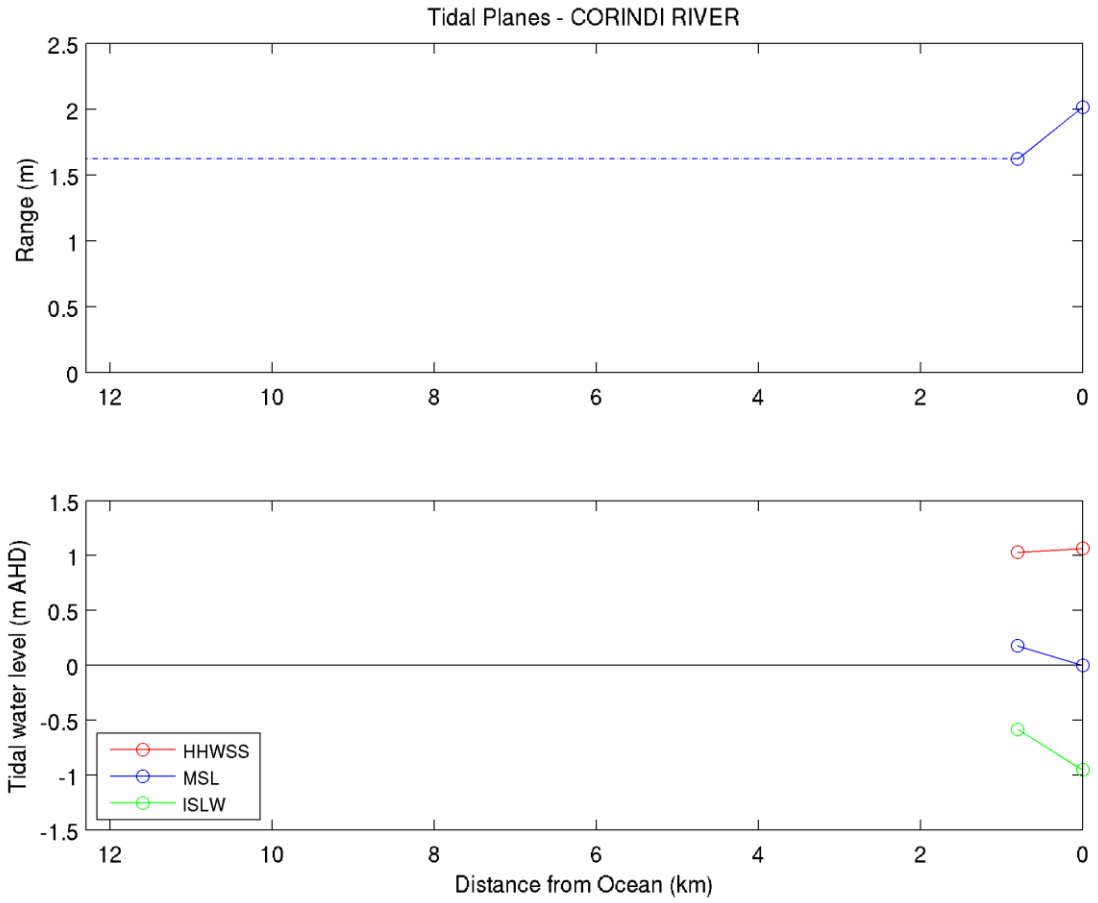

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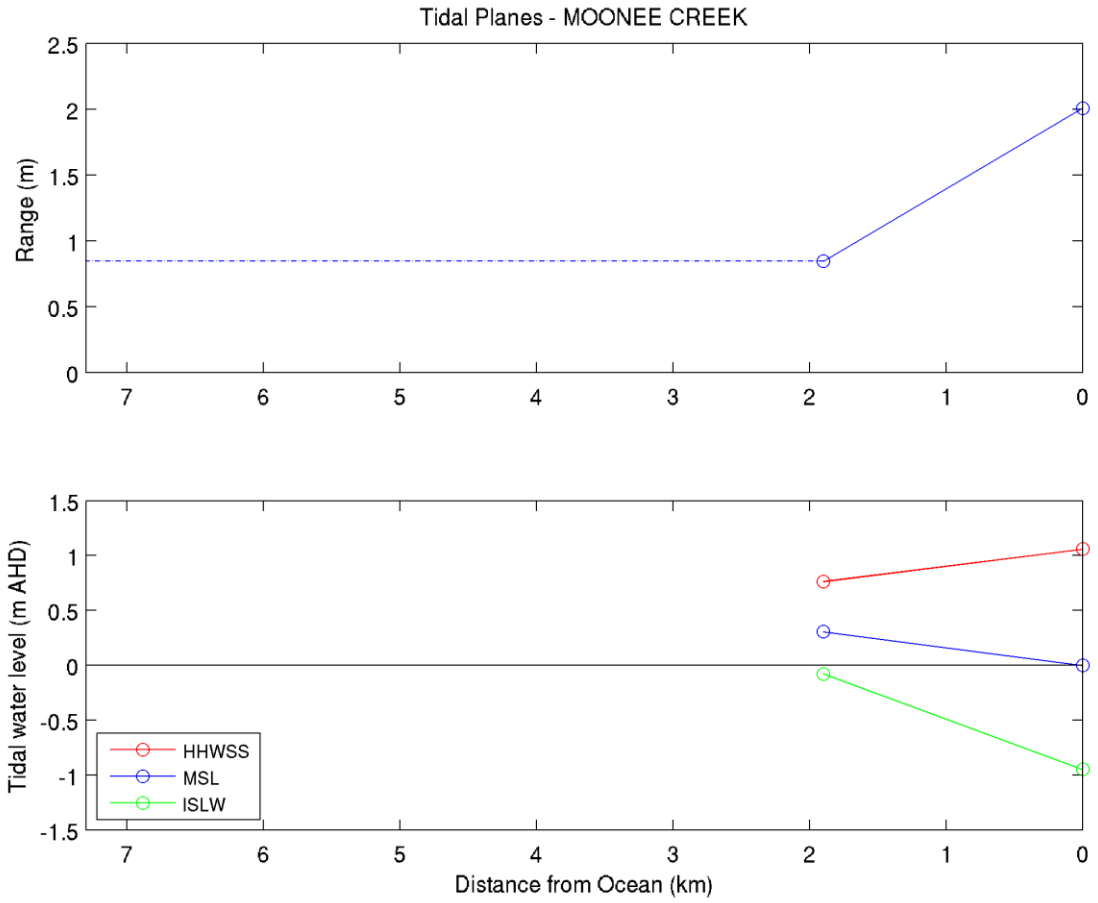

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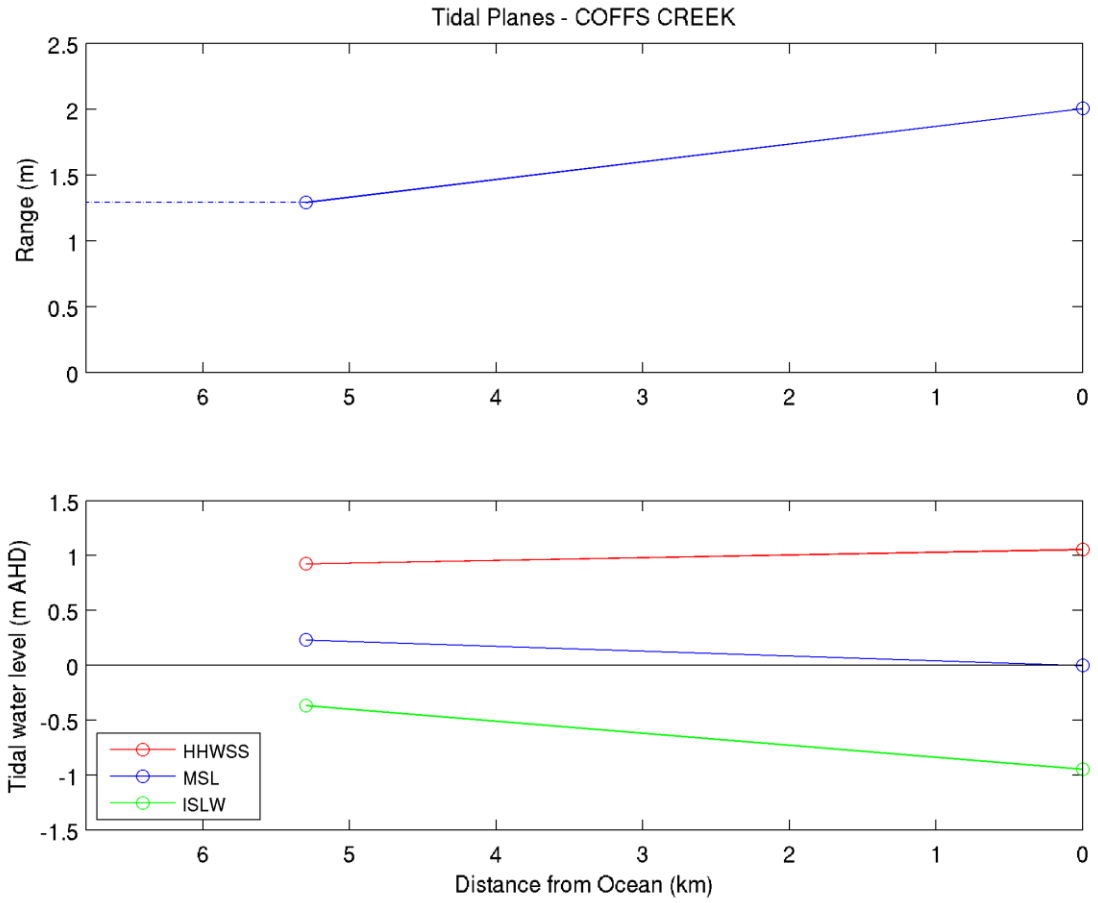

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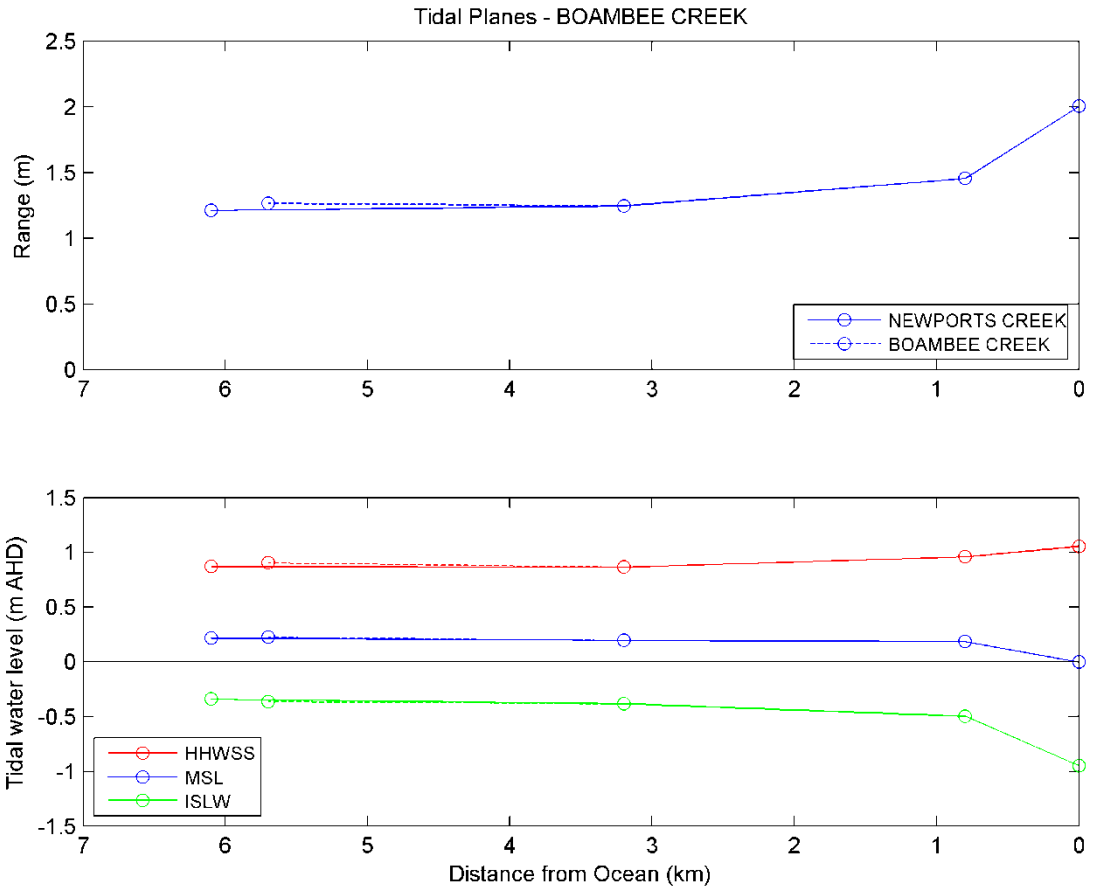

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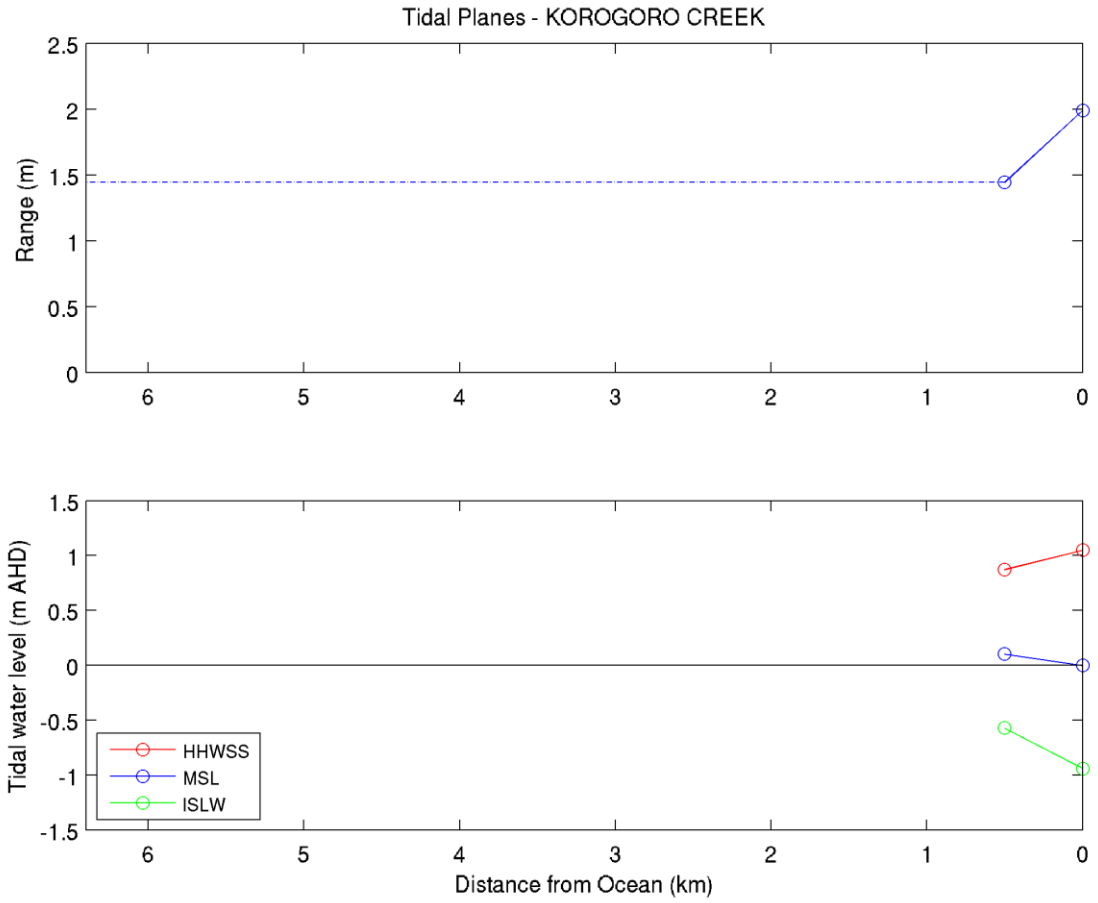

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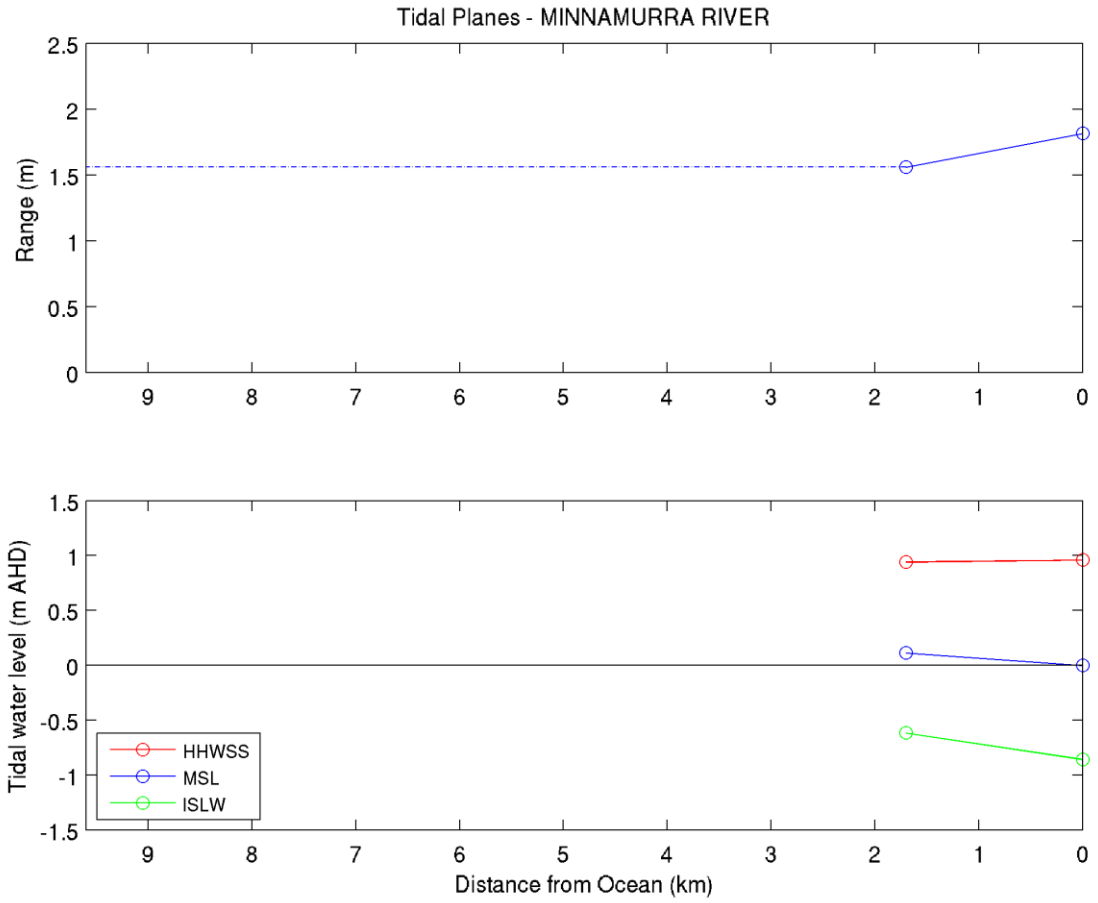

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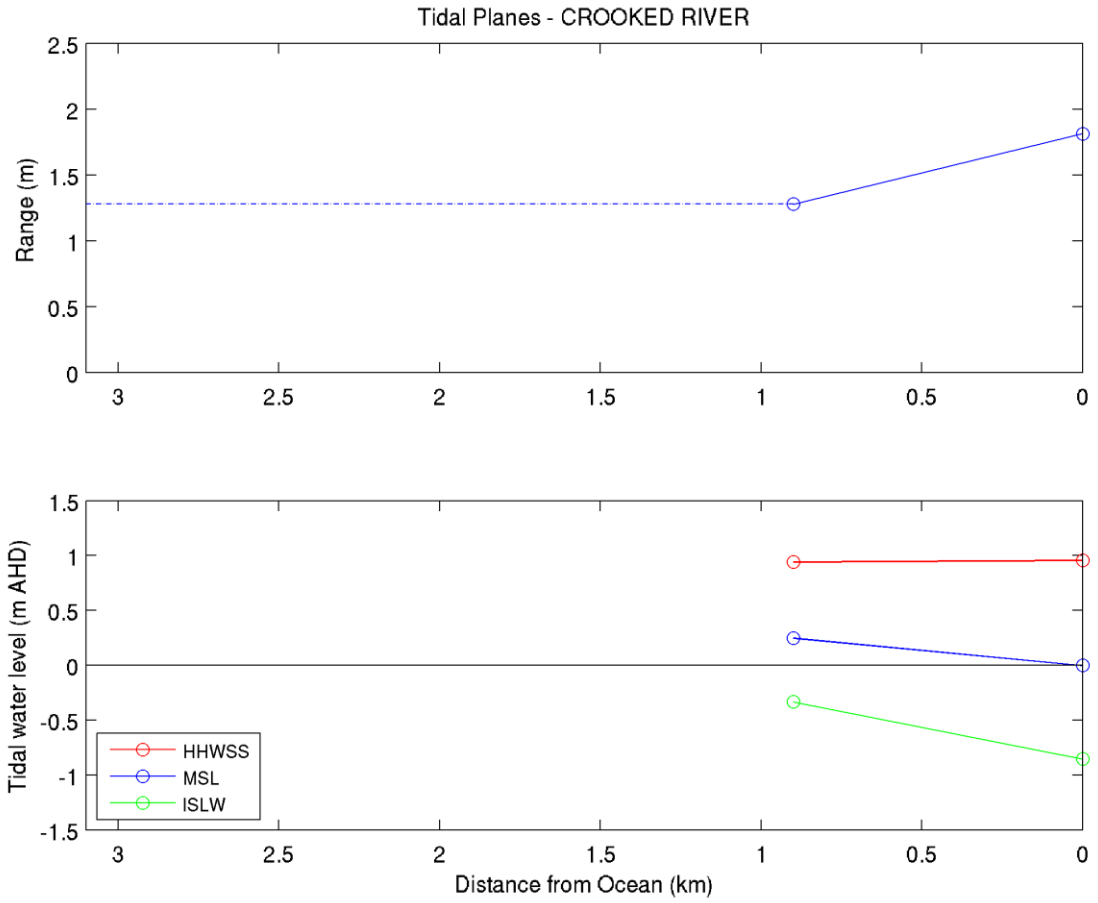

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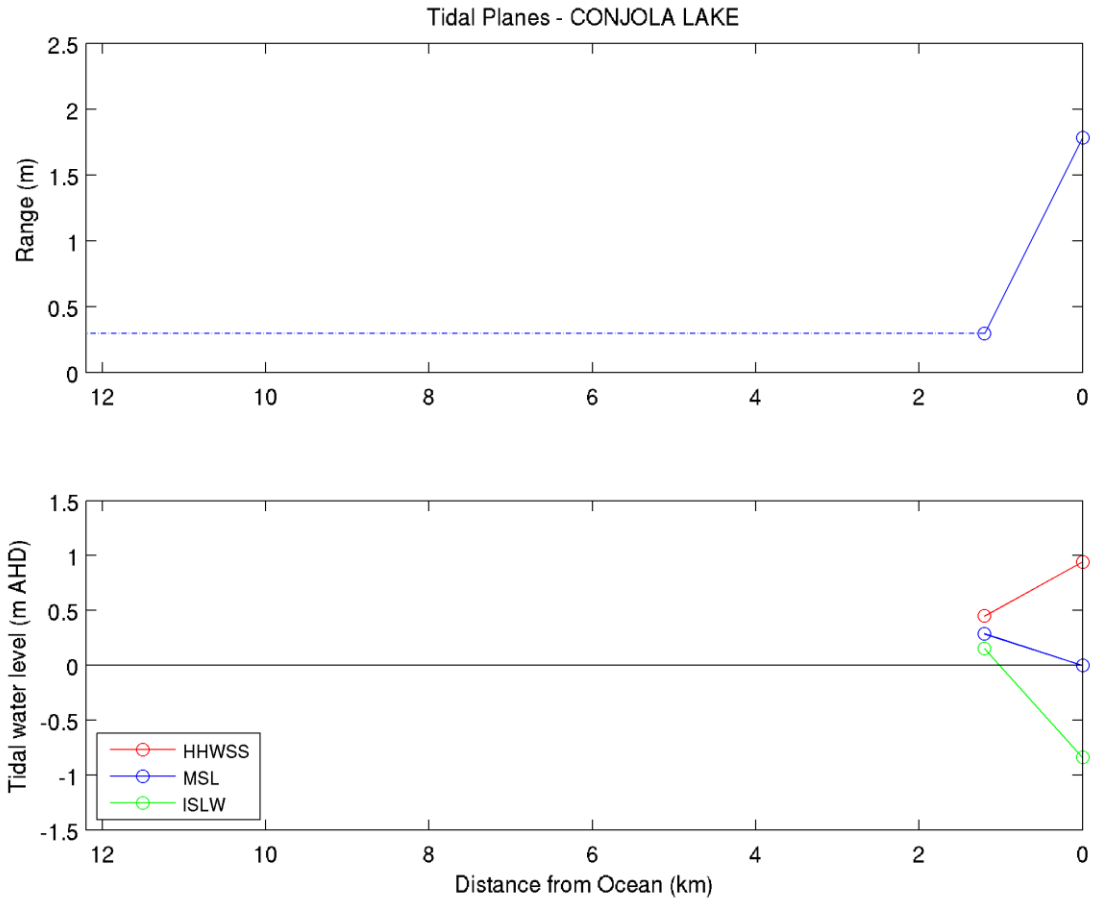

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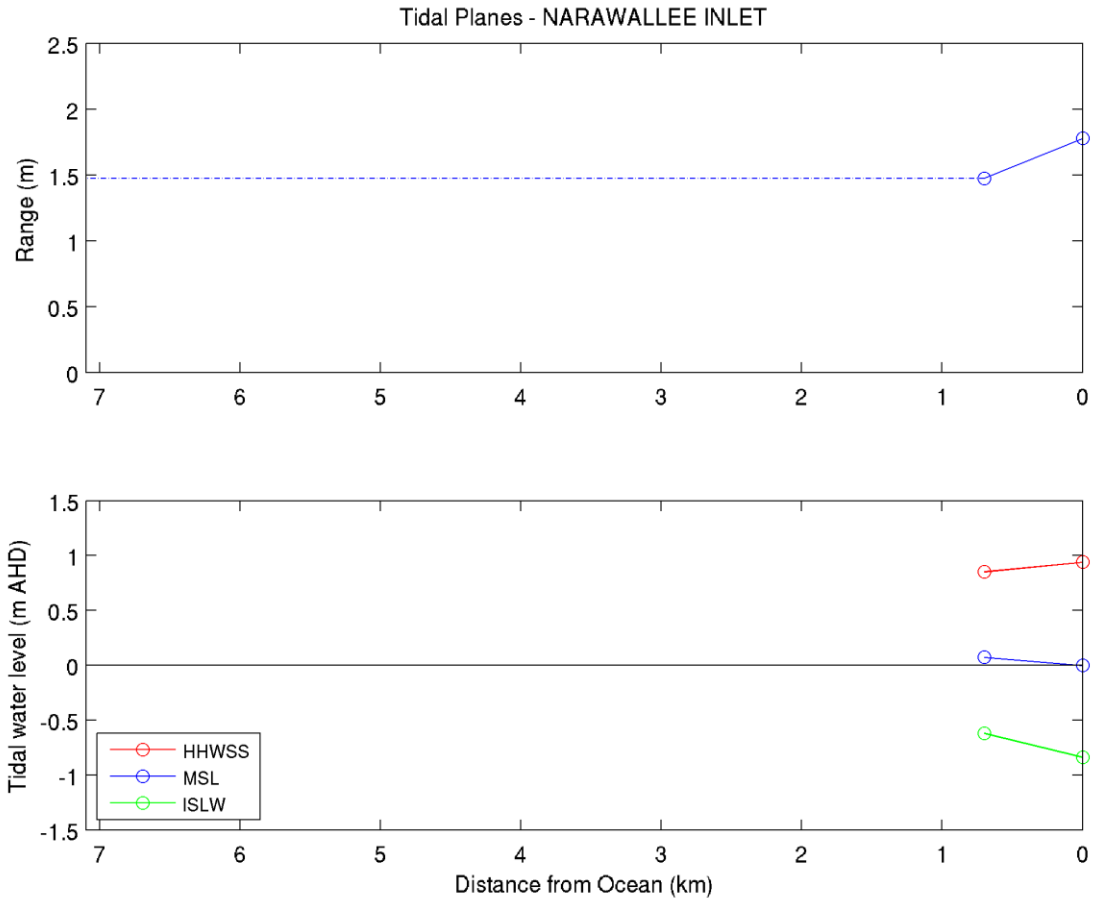

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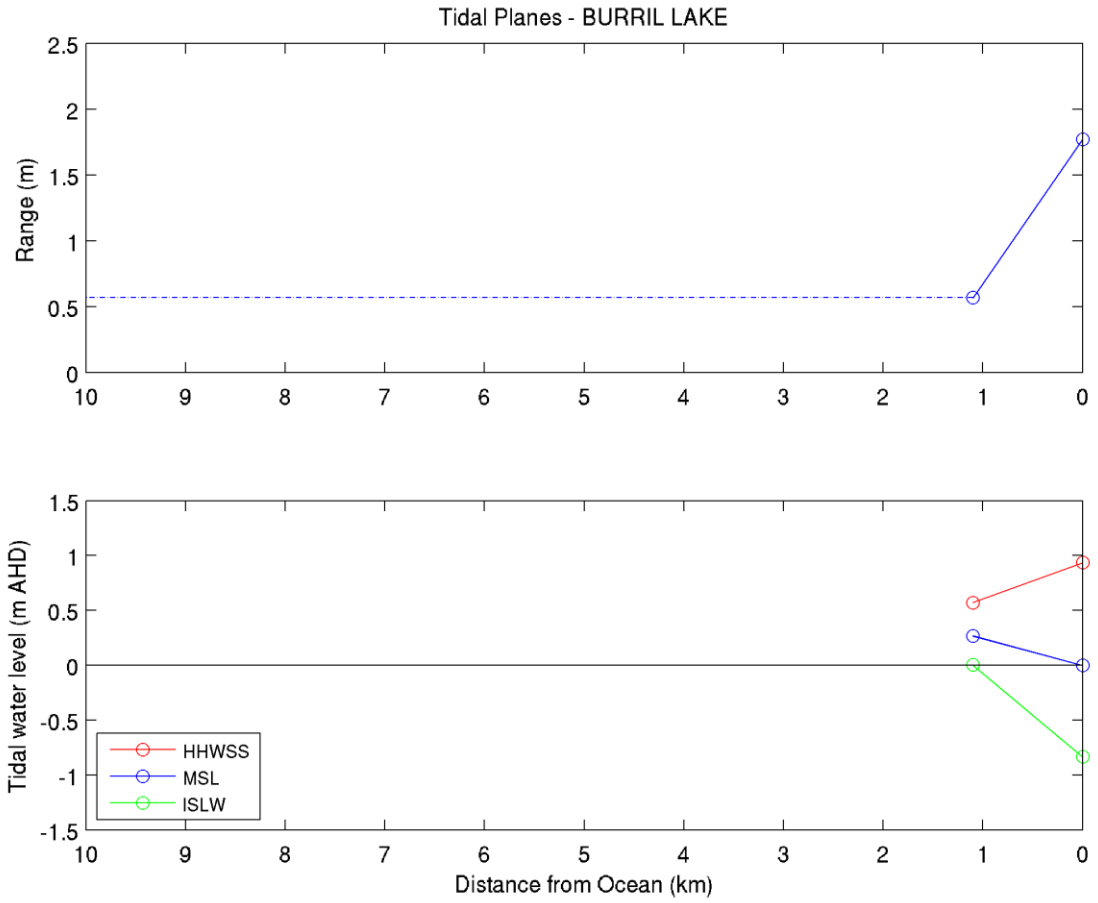

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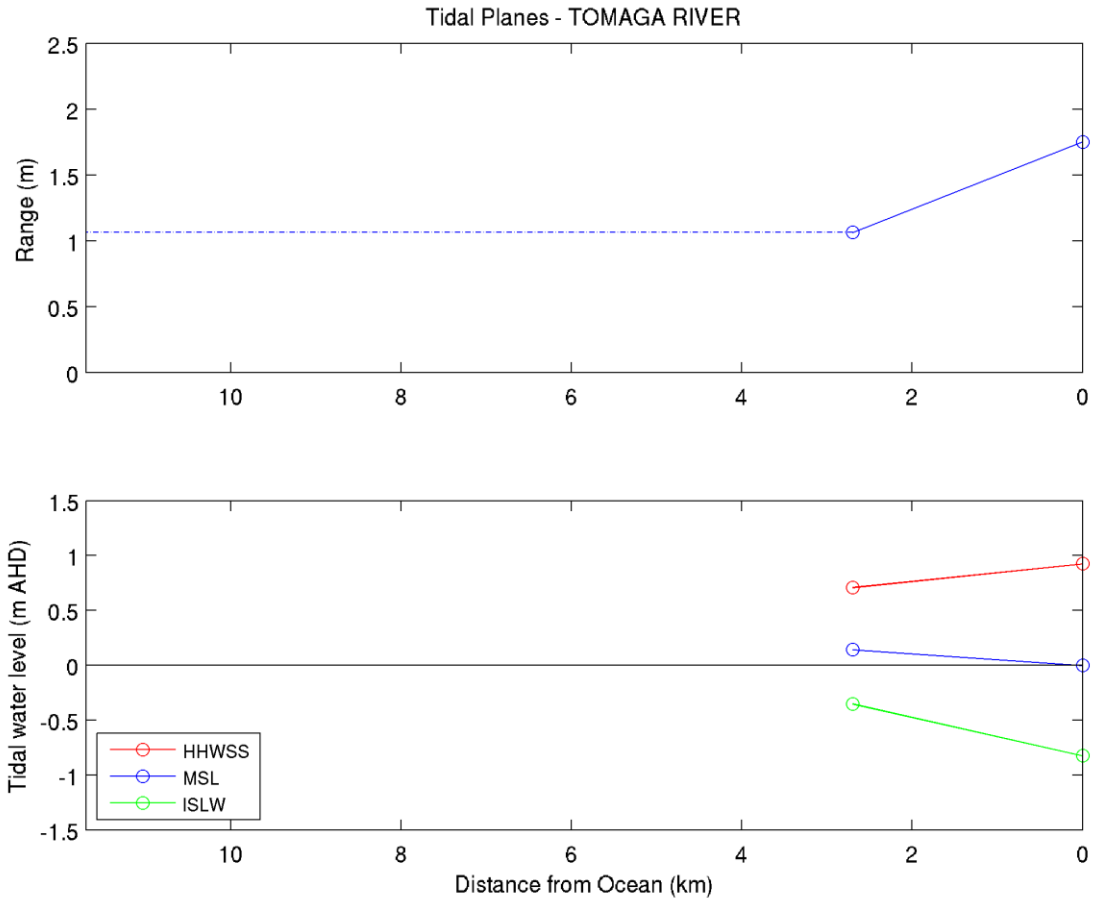

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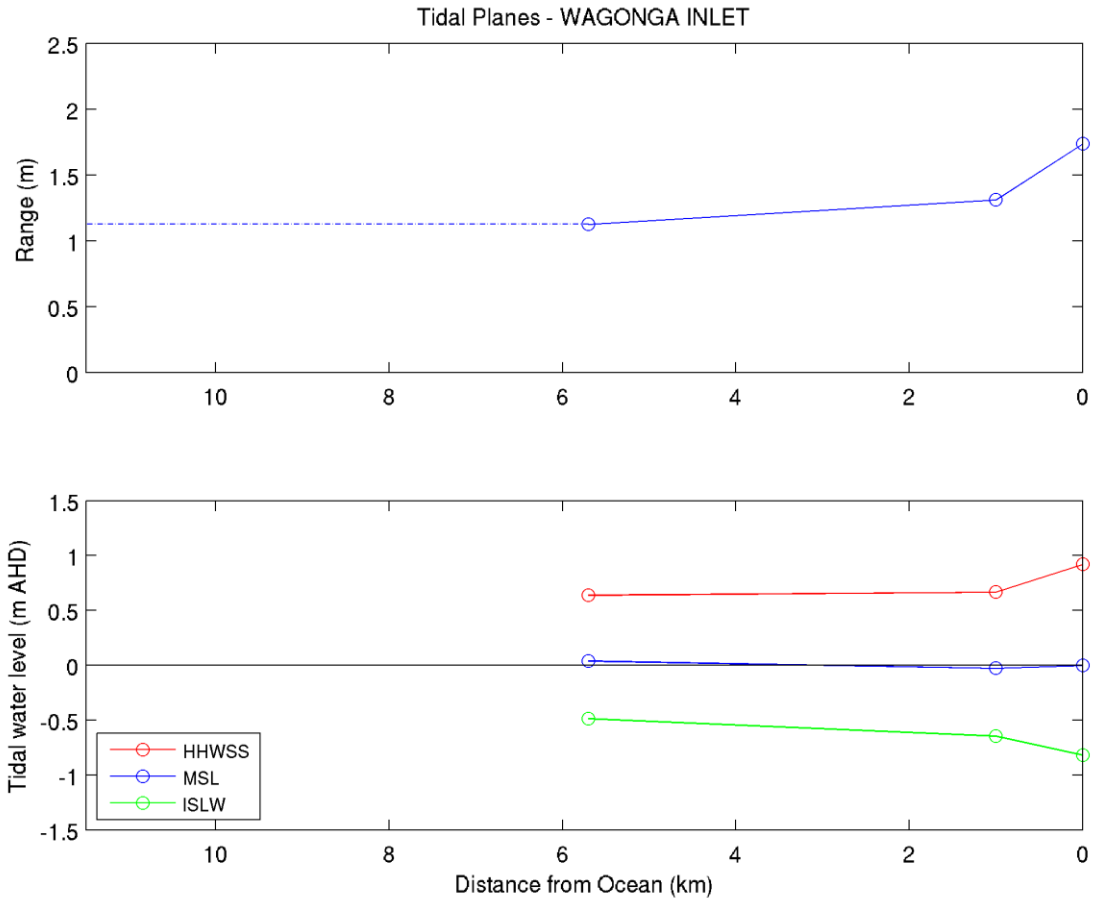

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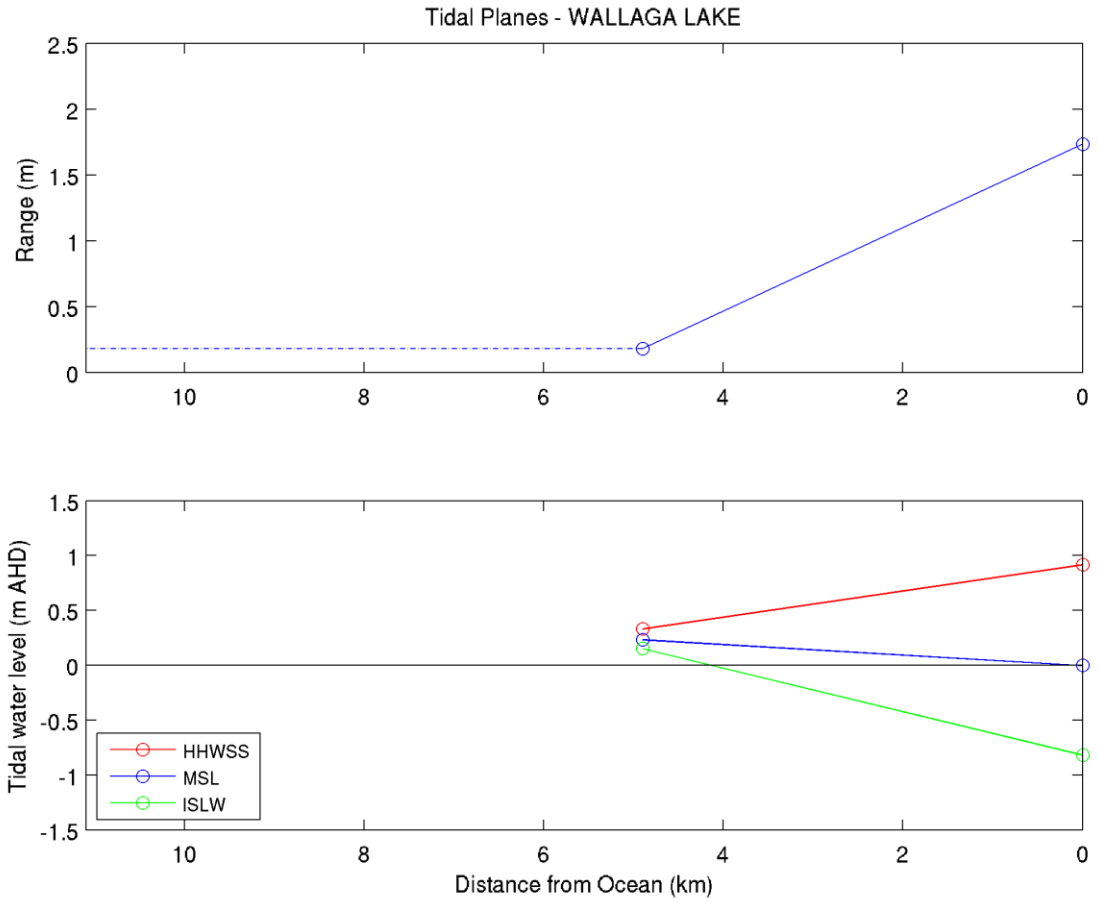

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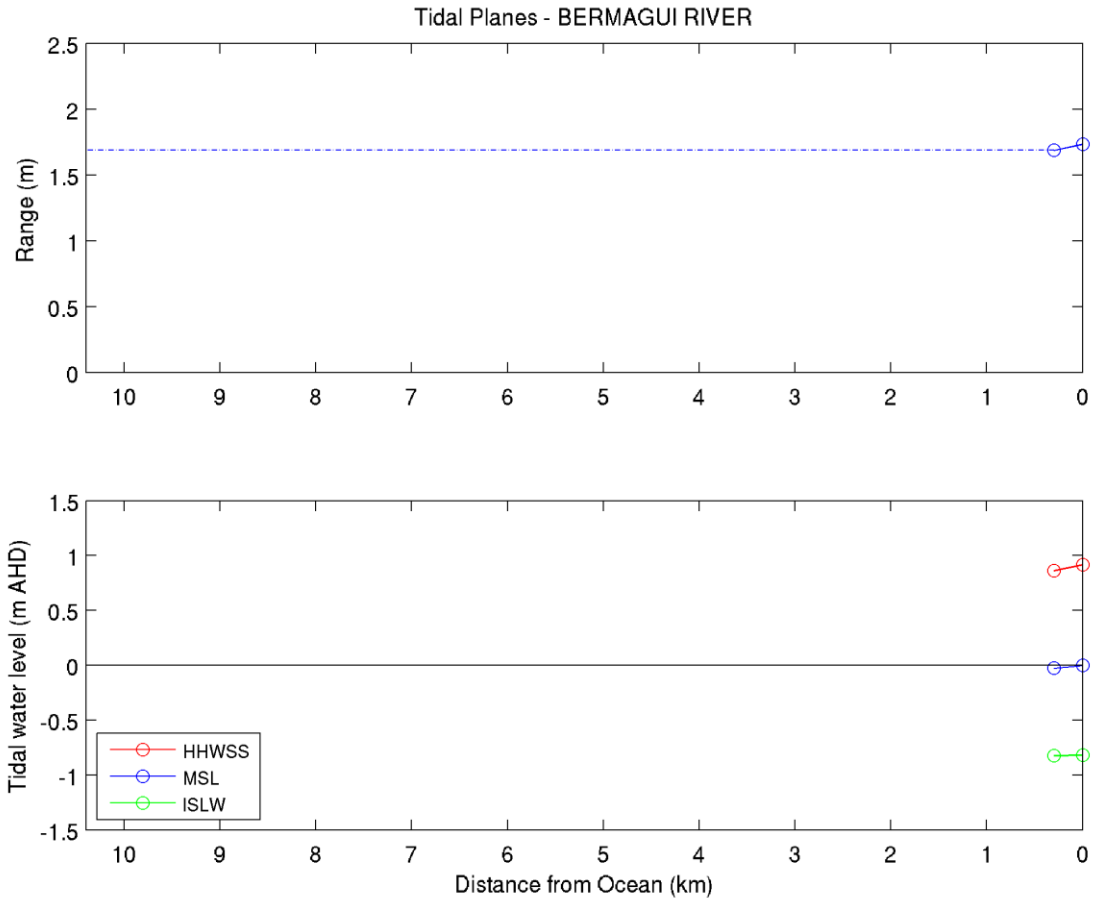

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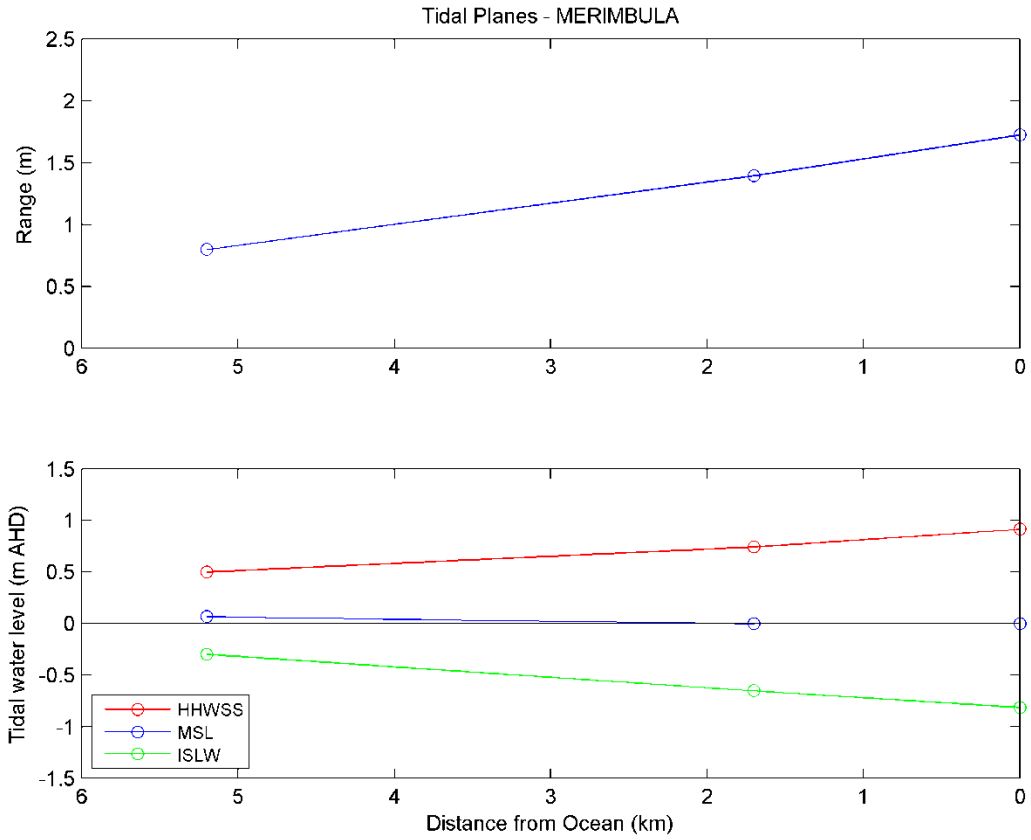

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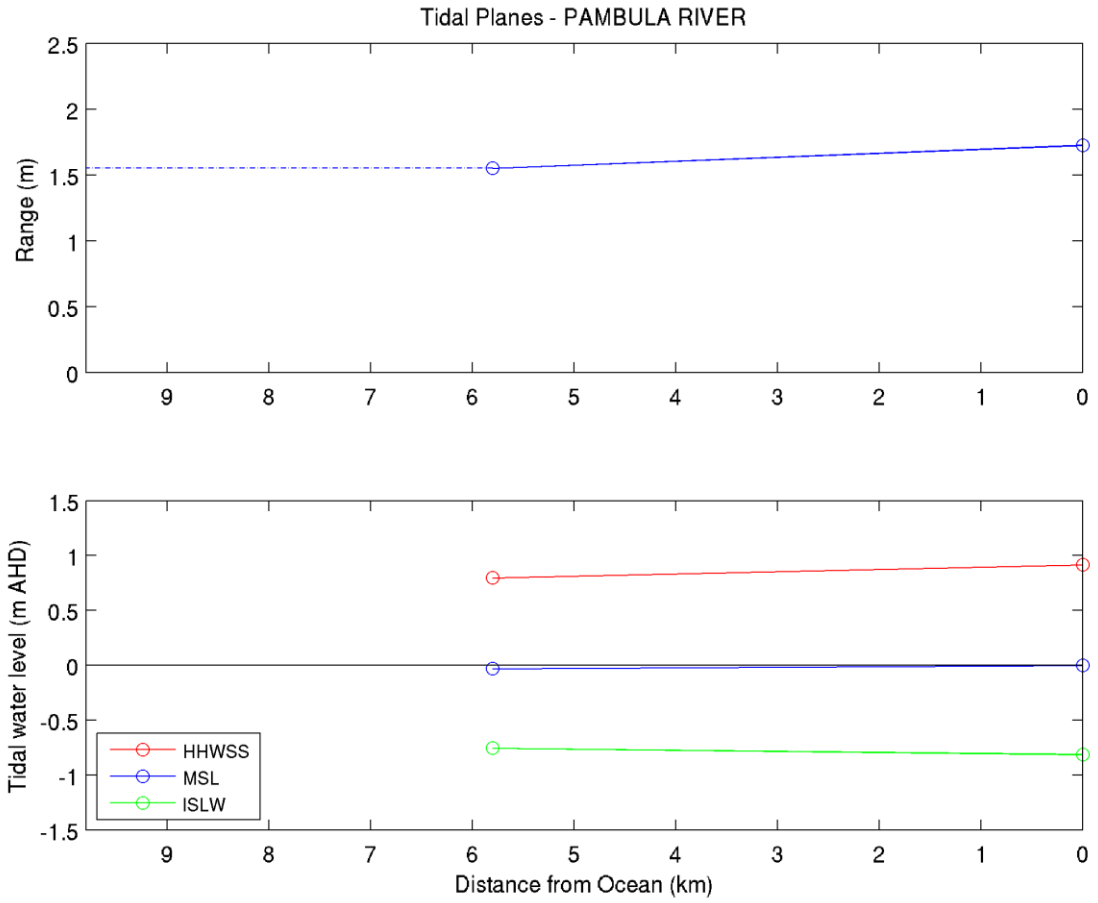

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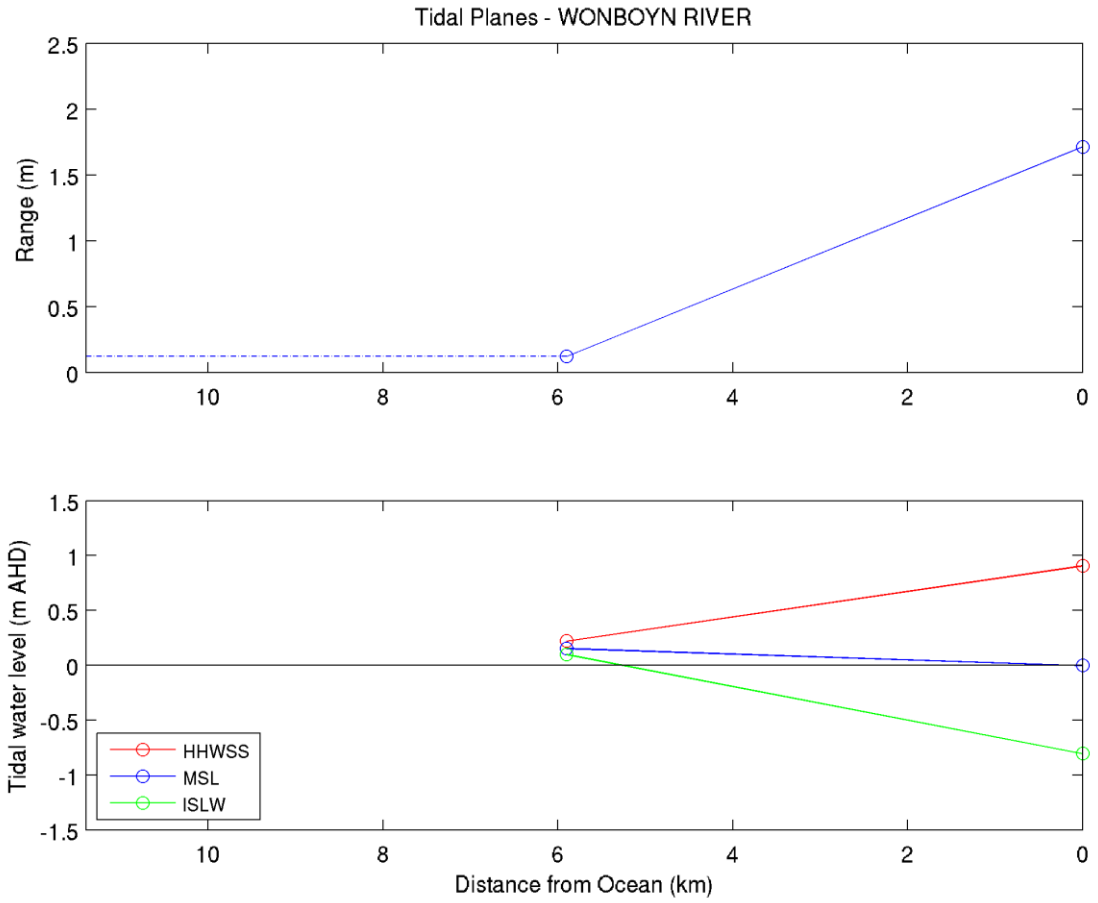

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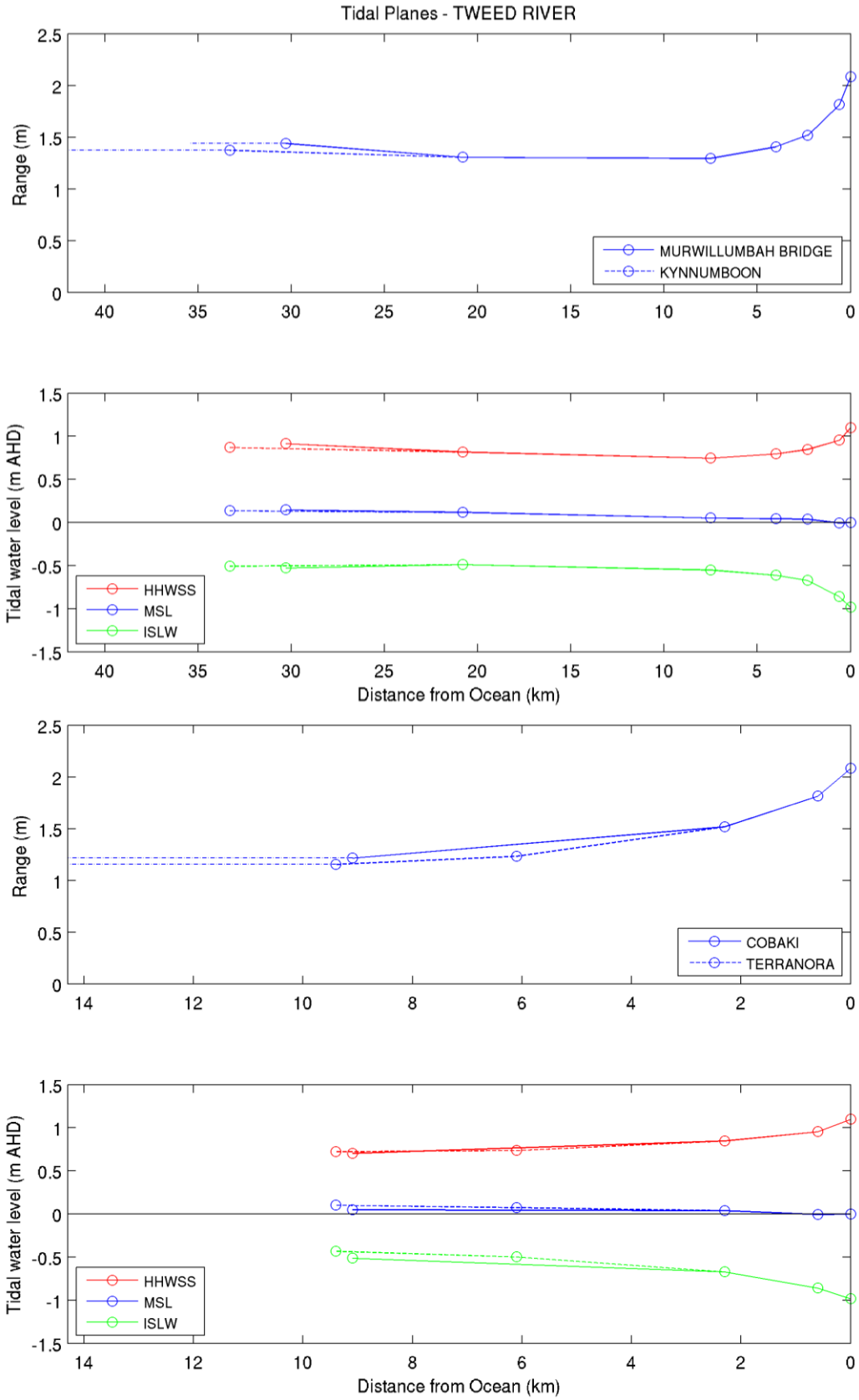

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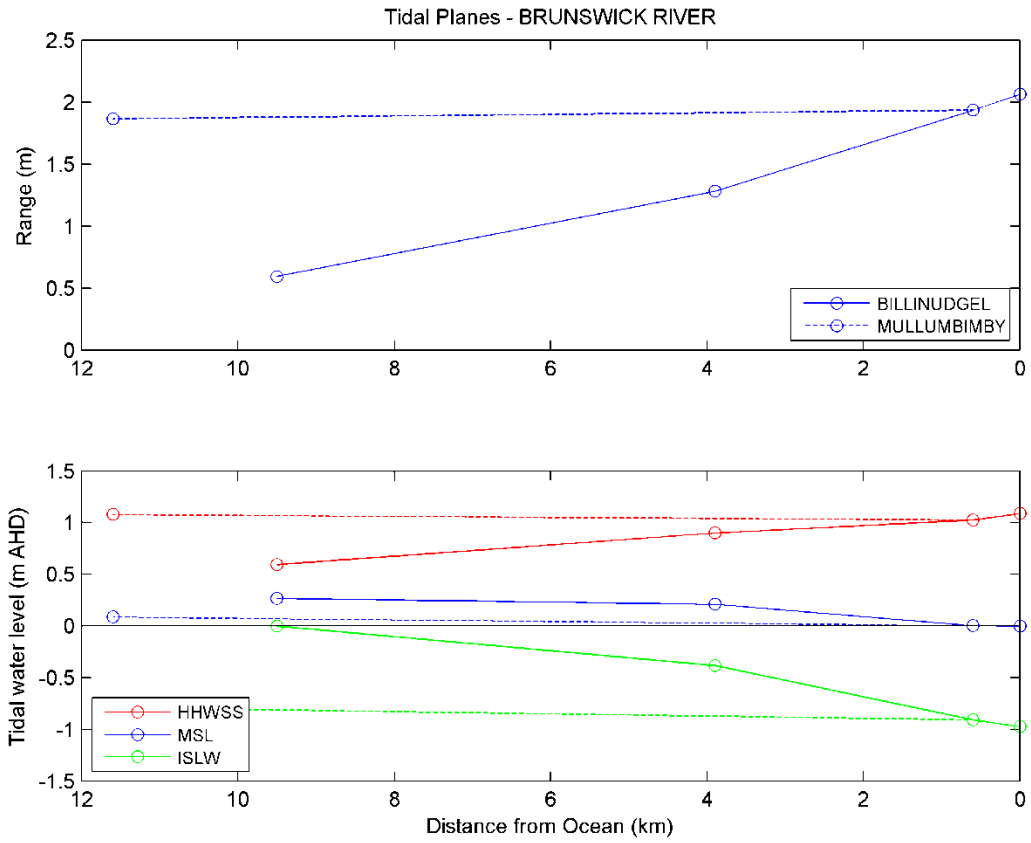

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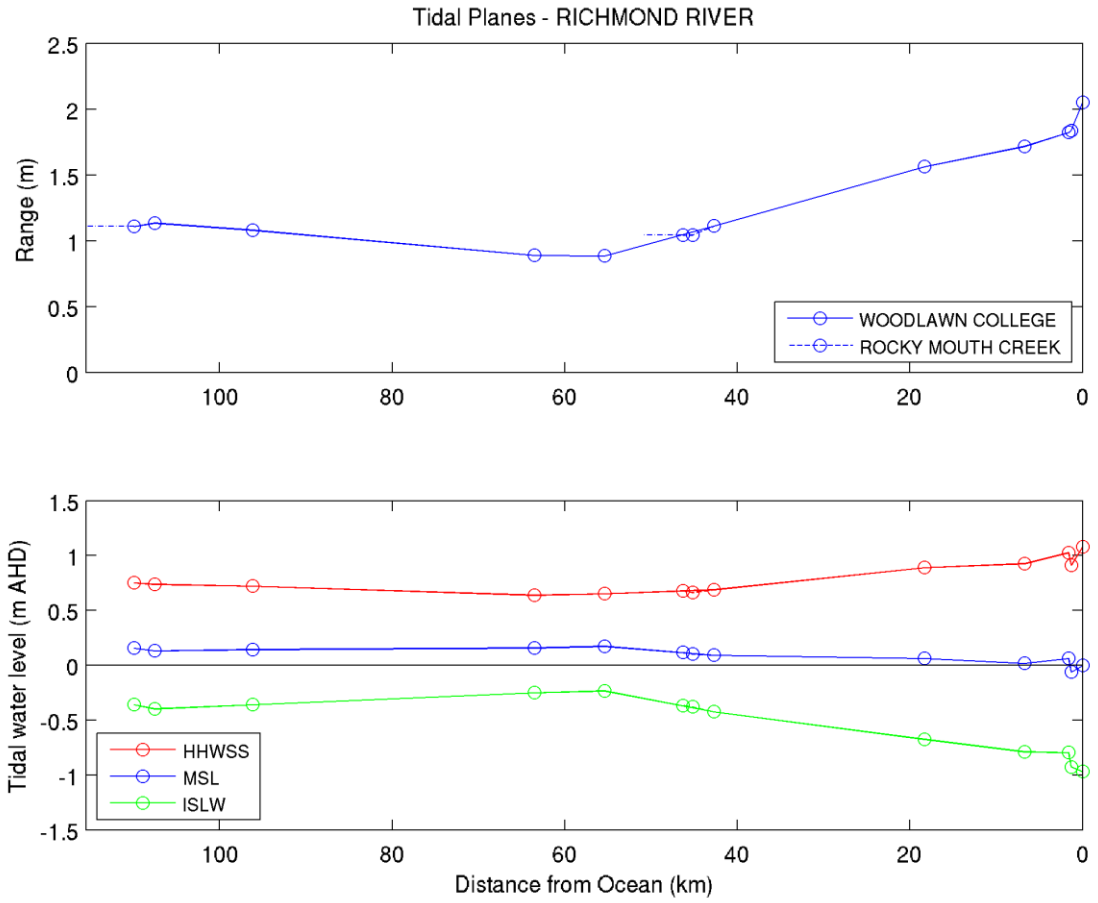

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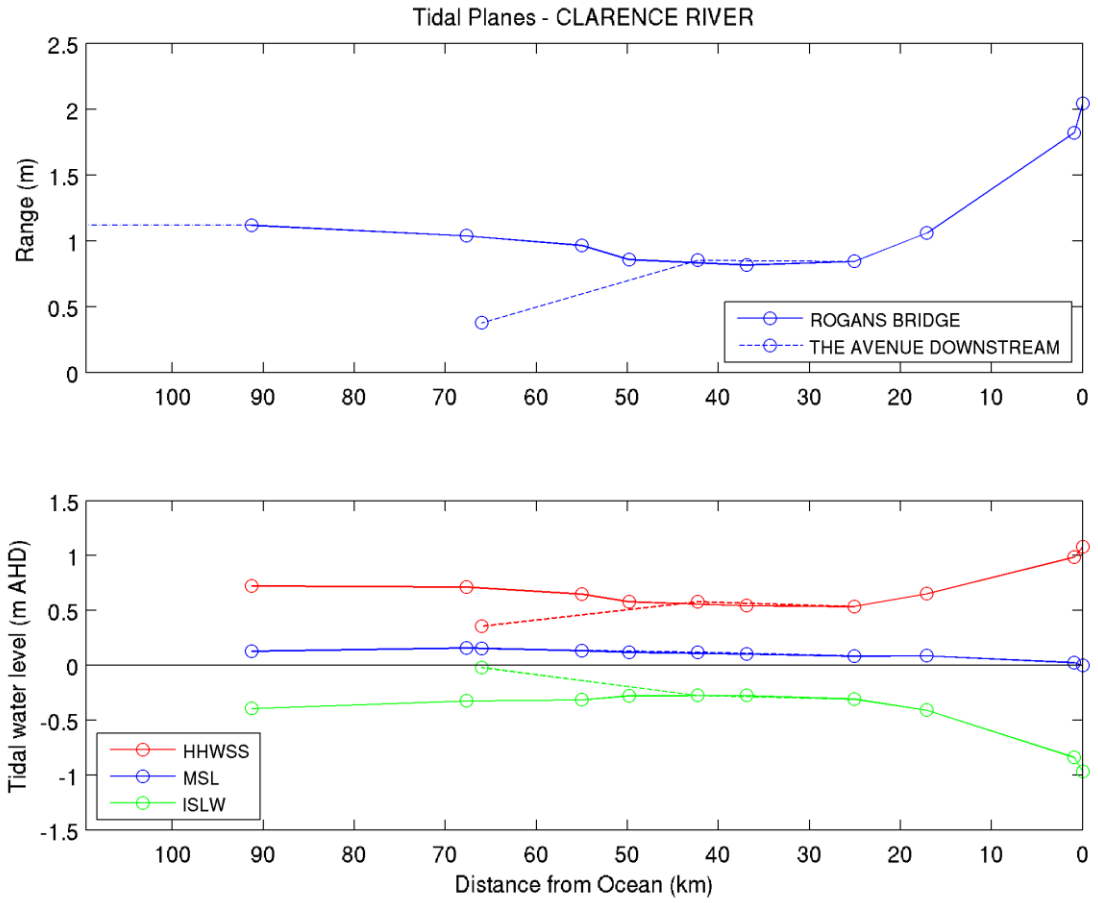

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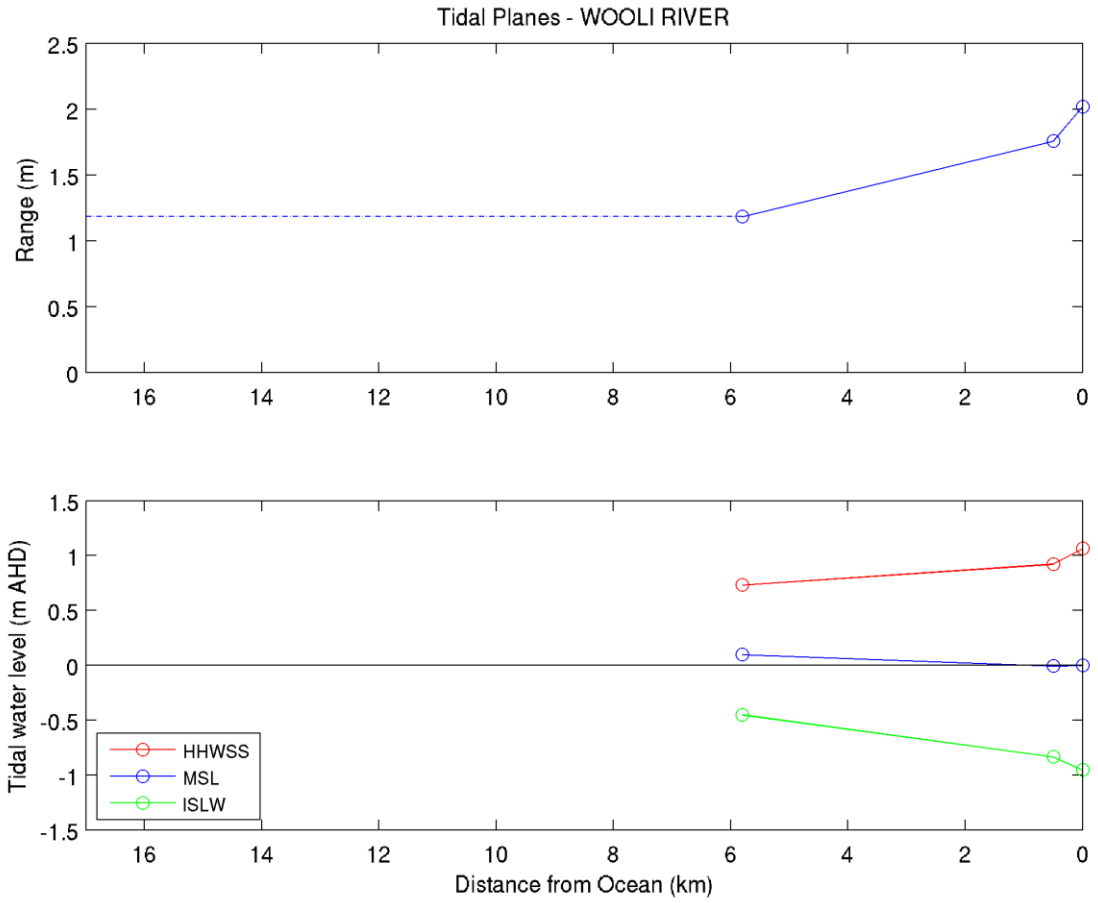

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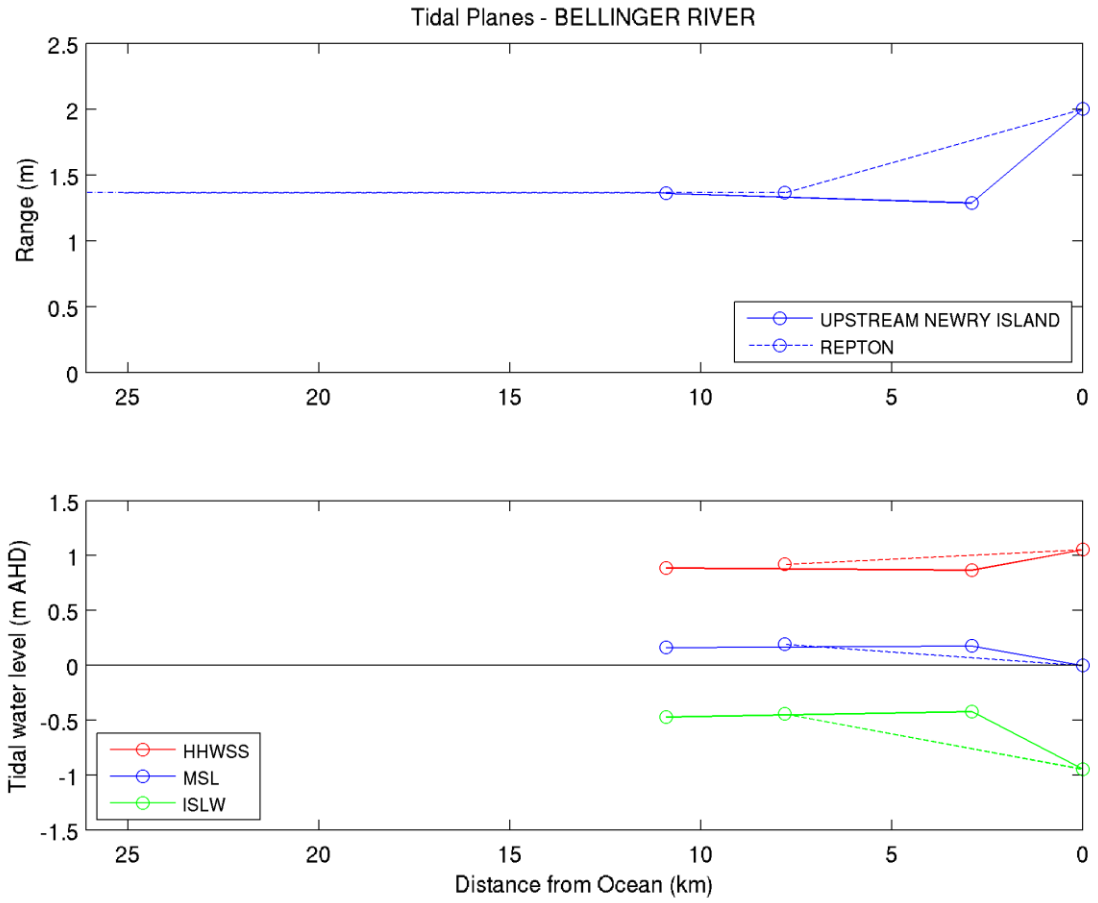

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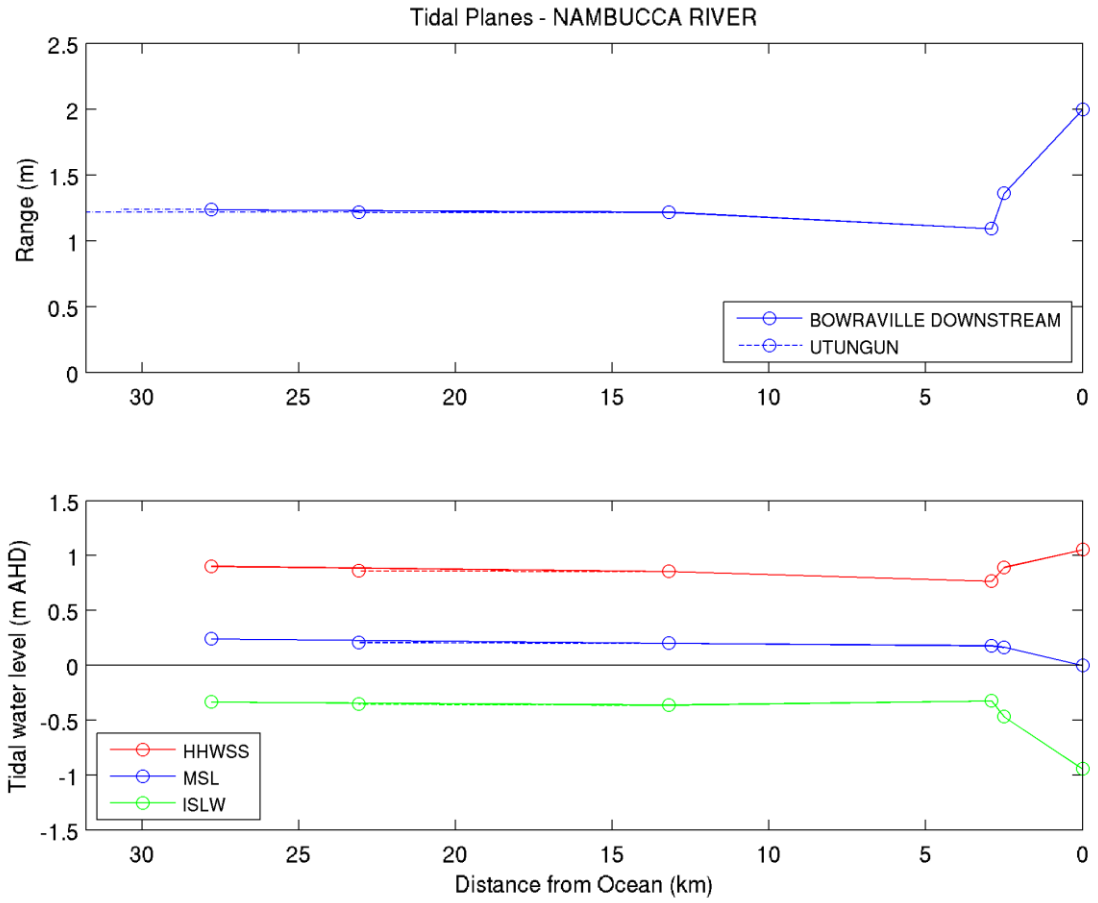

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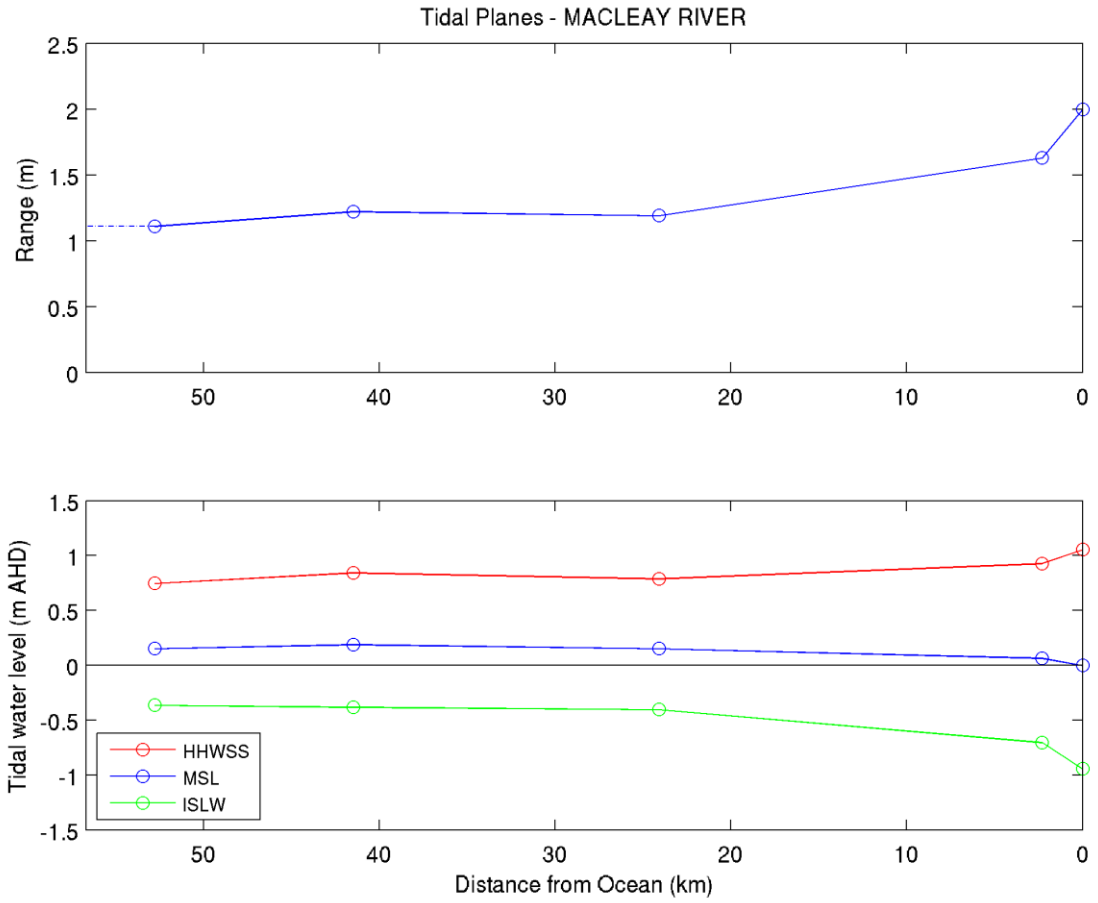

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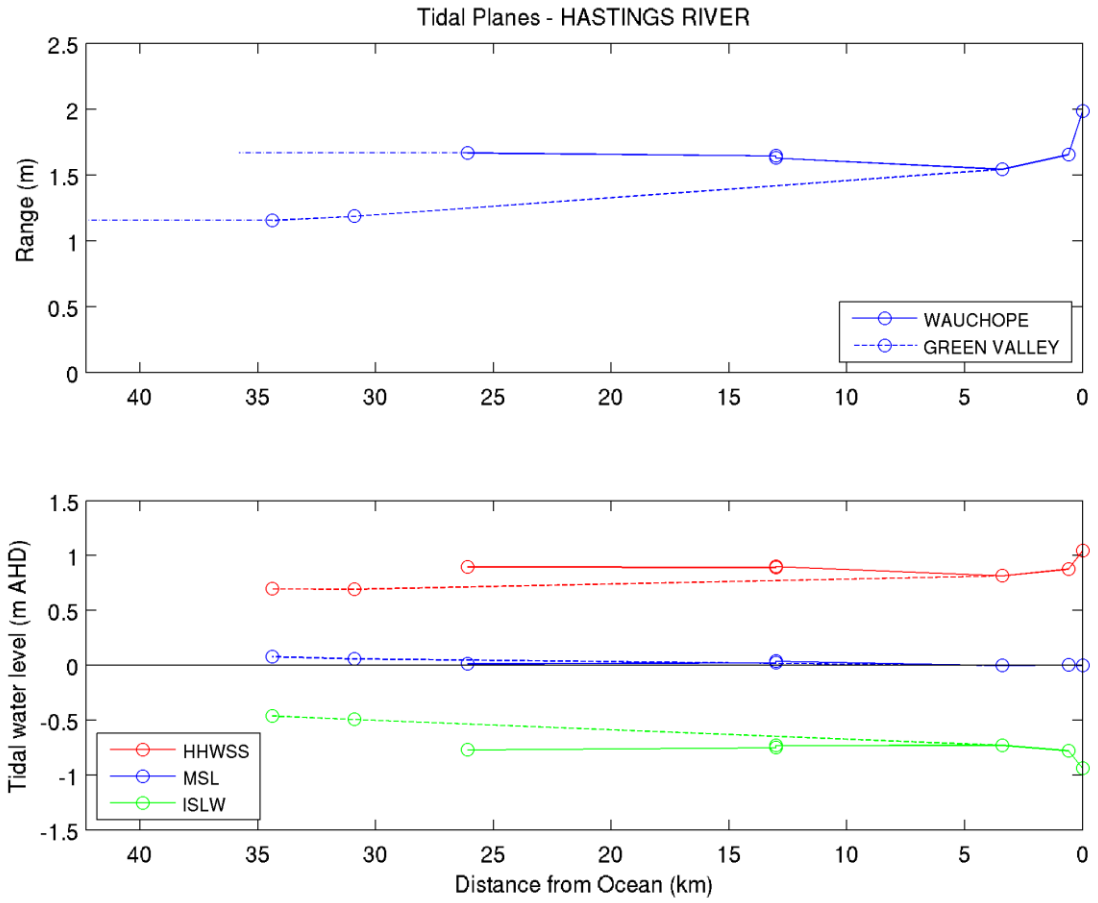

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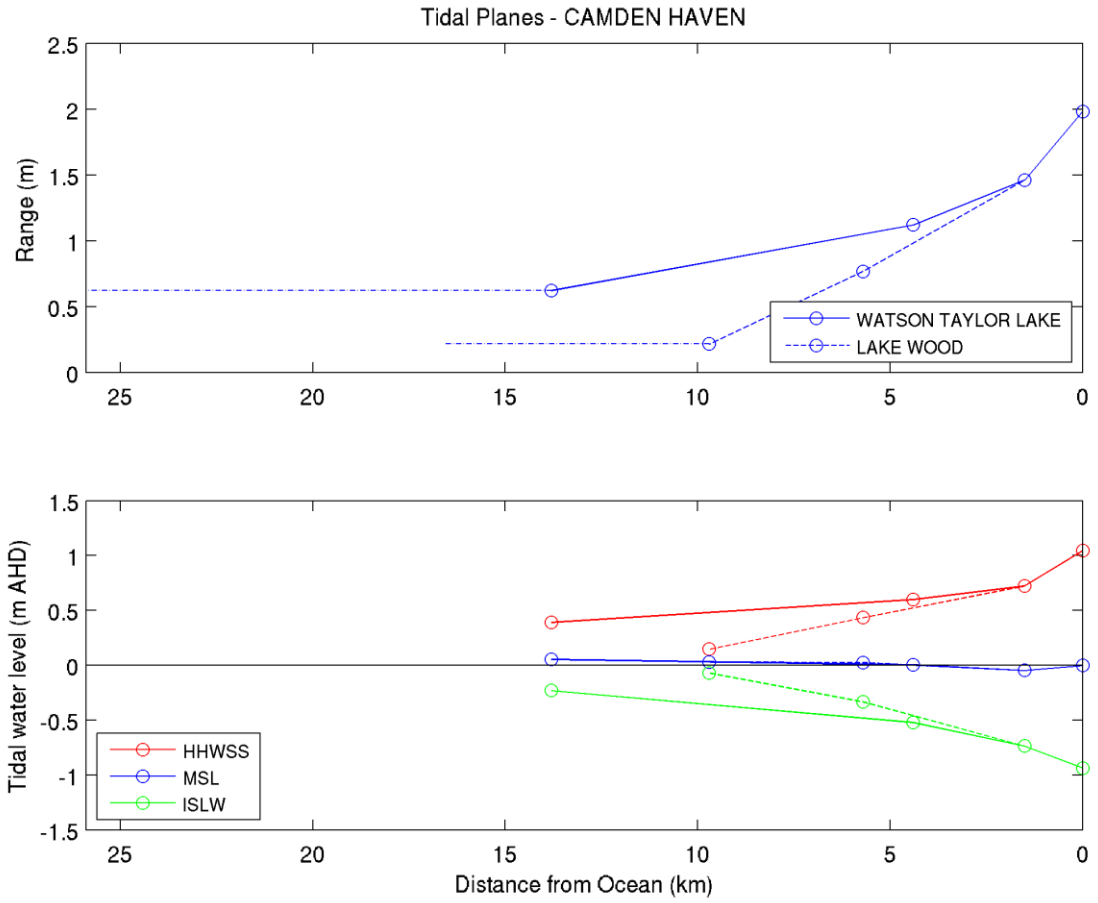

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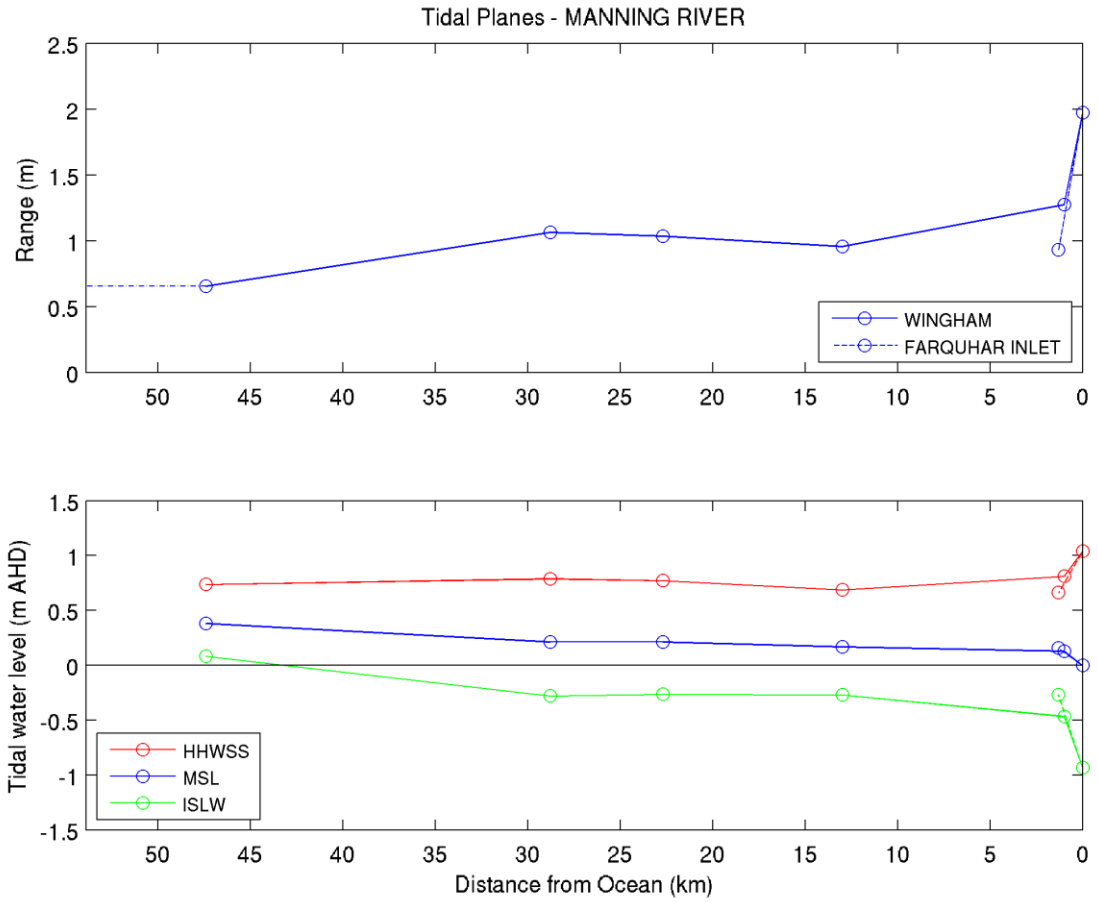

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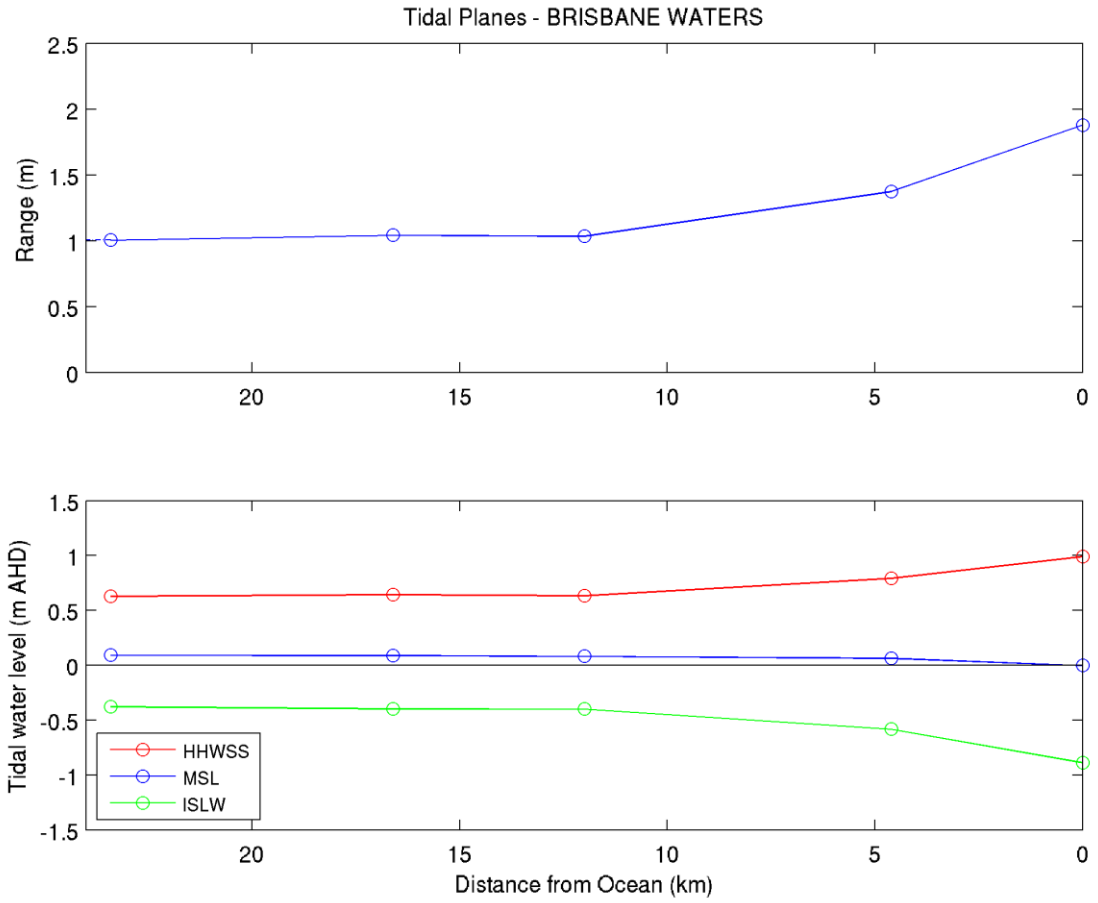

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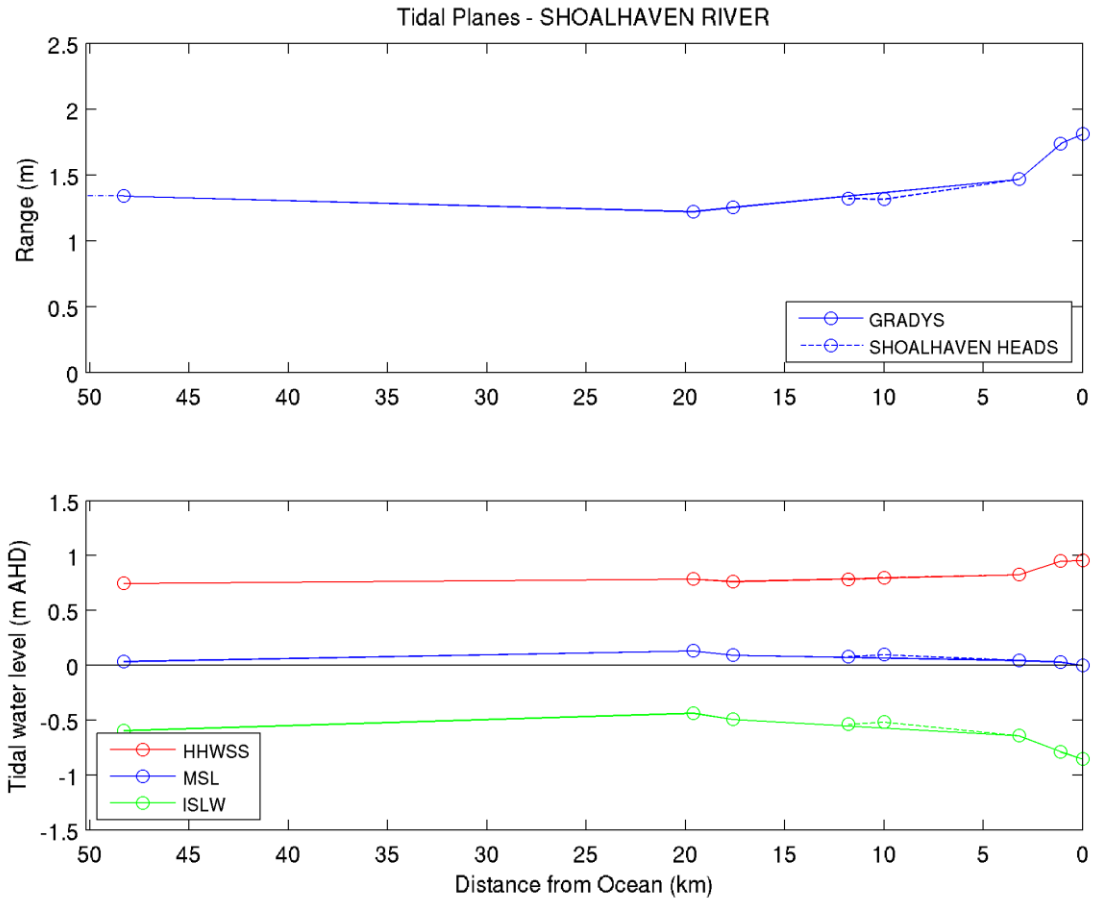

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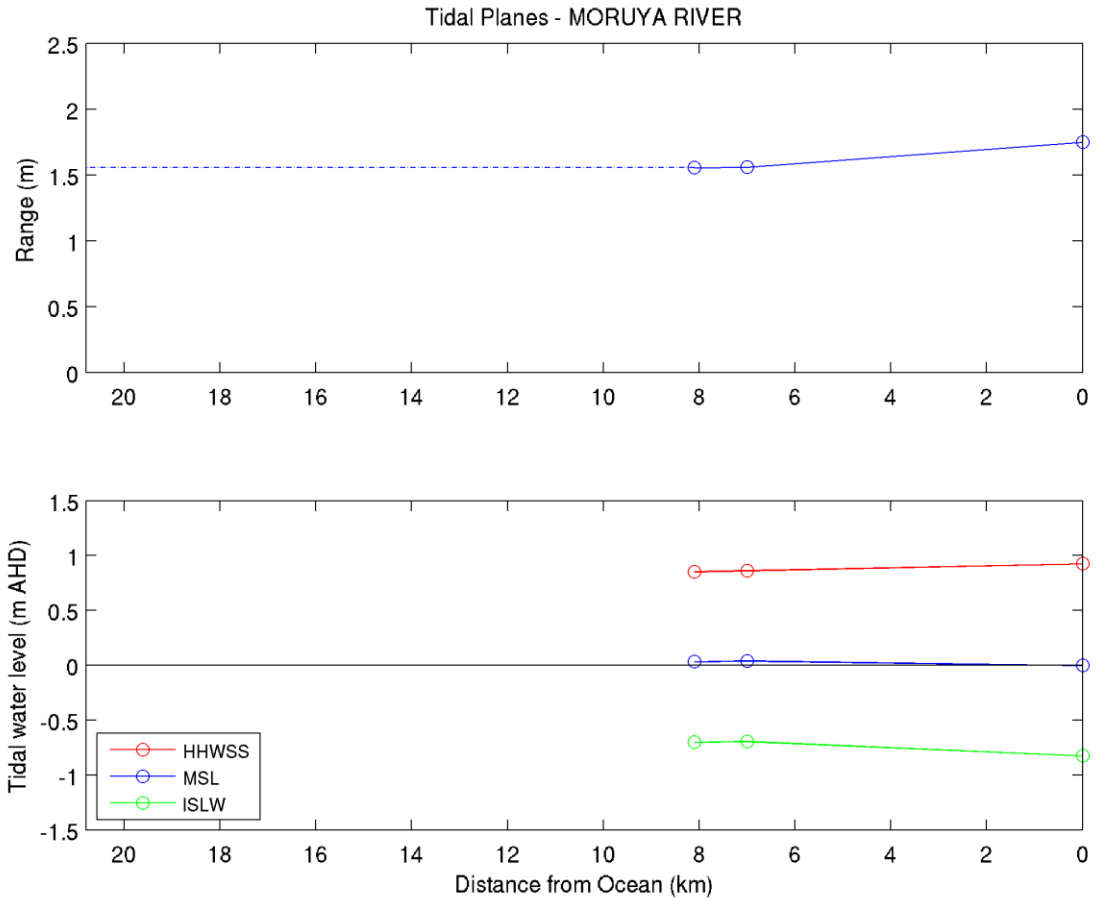

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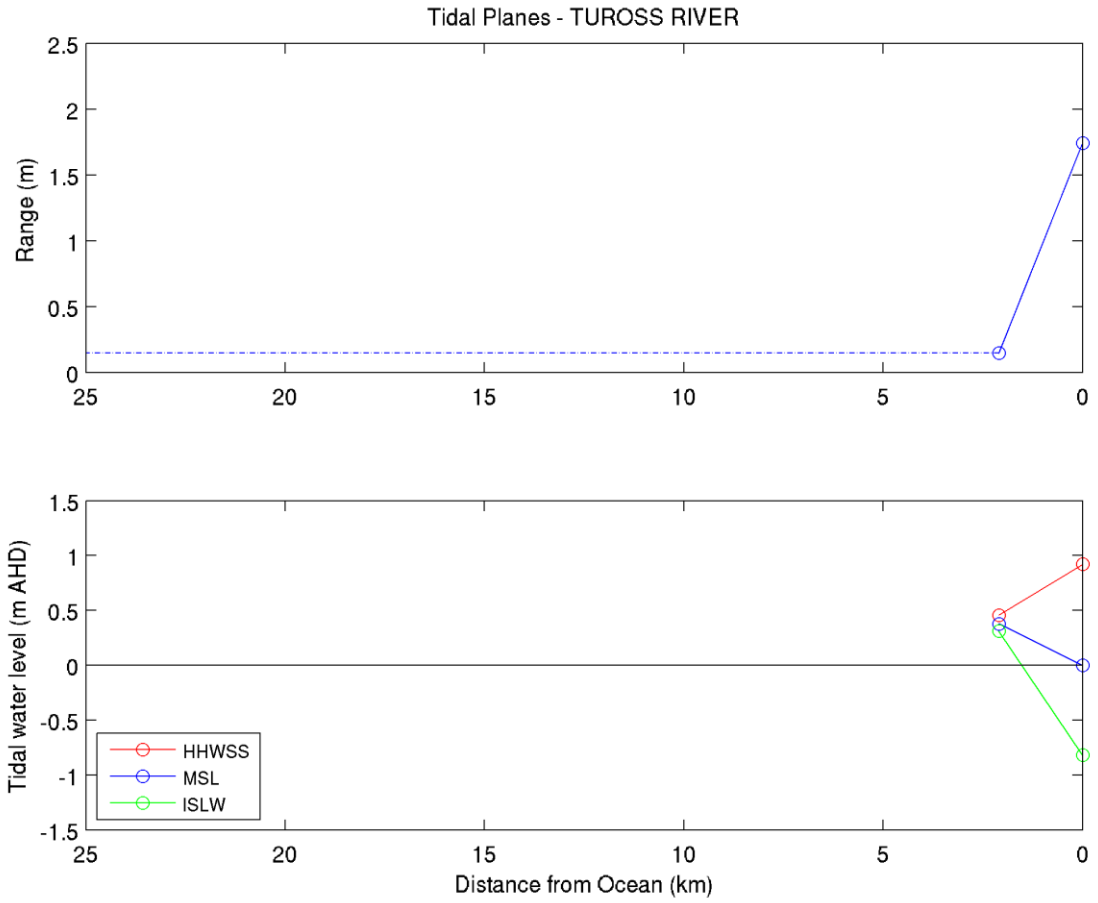

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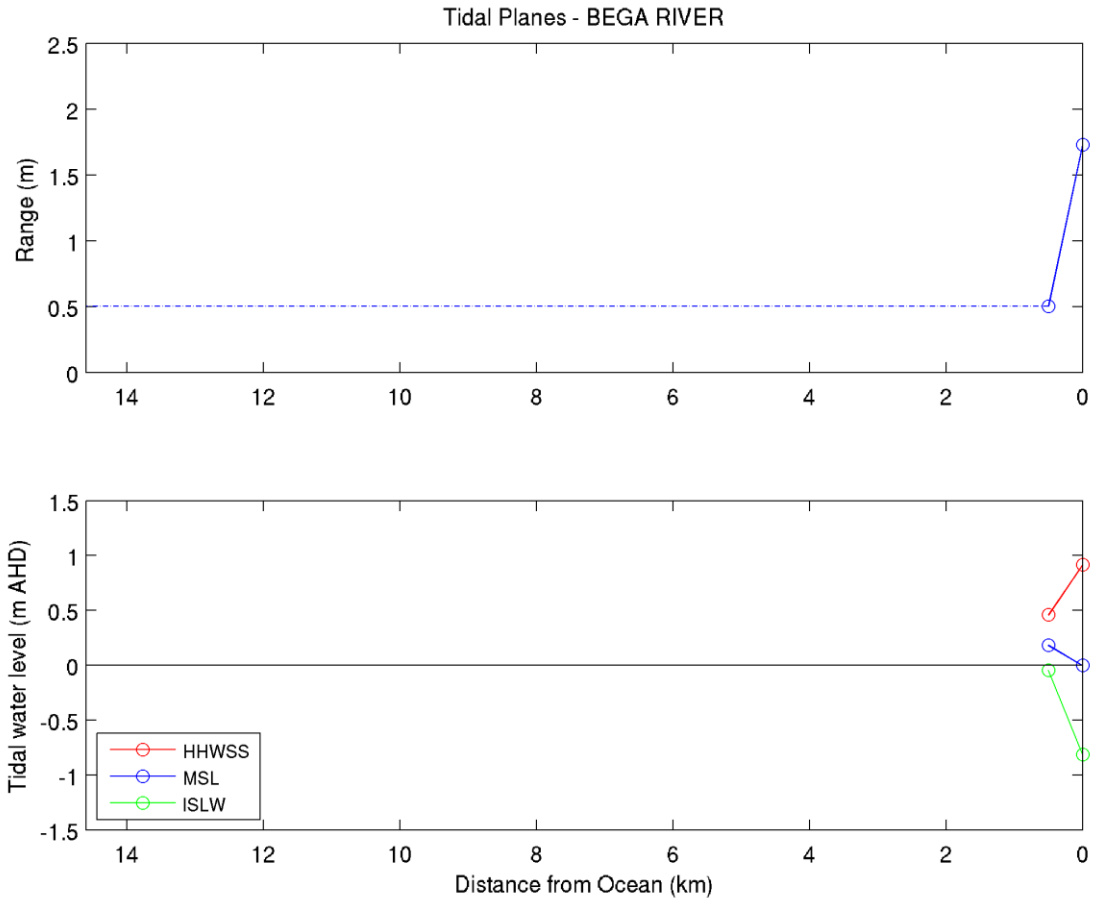

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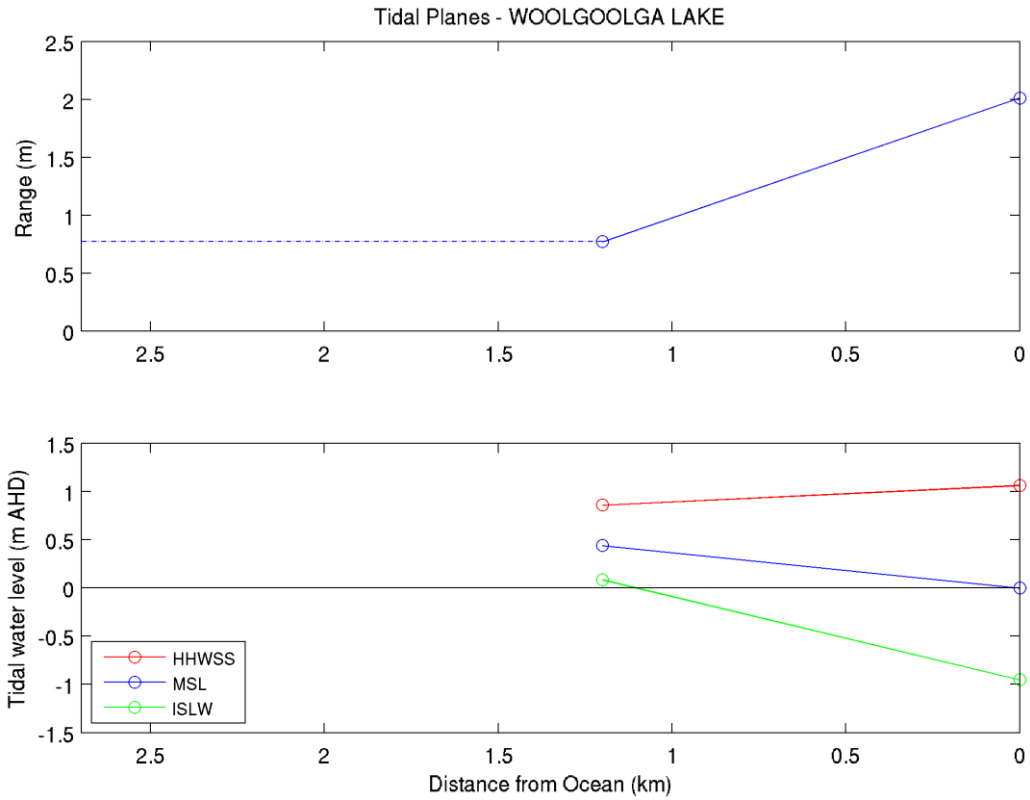

Figure B.48. Plots of tidal planes as a function of distance from ocean for Woolgoolga Lake Estuary (No. 023)

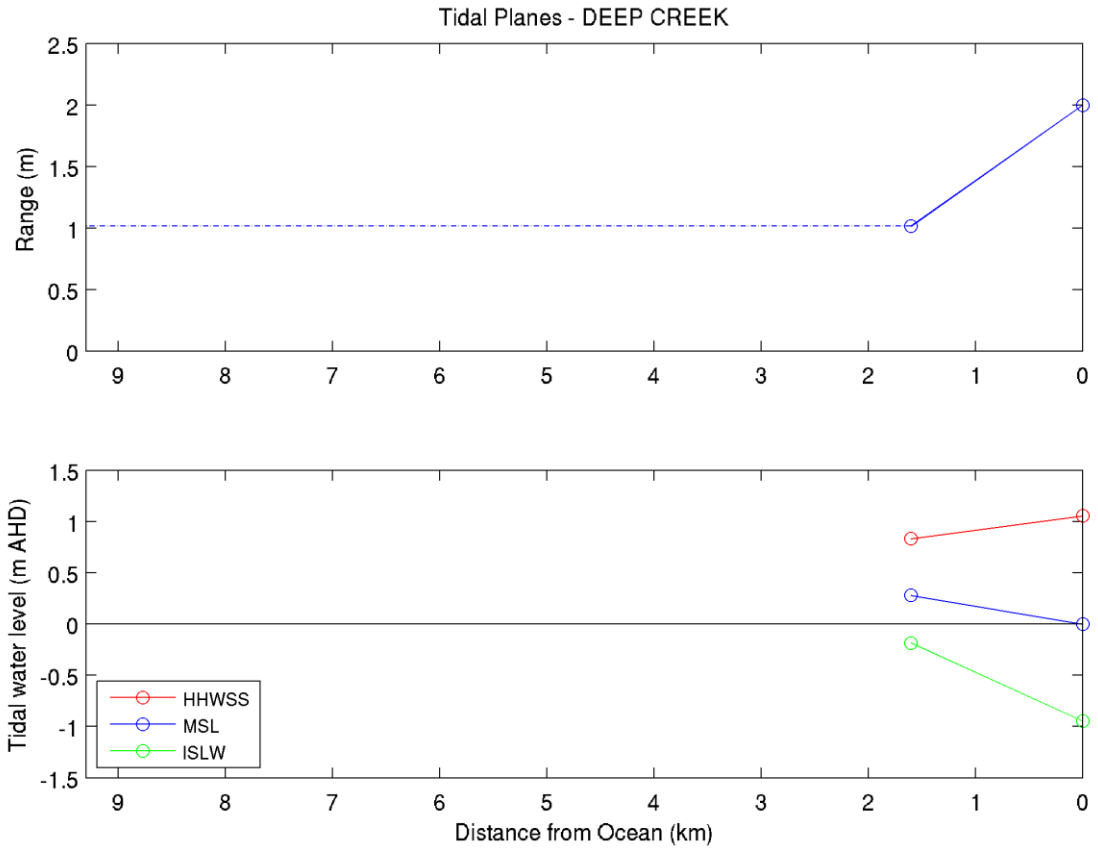

Figure B.49. Plots of tidal planes as a function of distance from ocean for Deep Creek Estuary (No. 035)

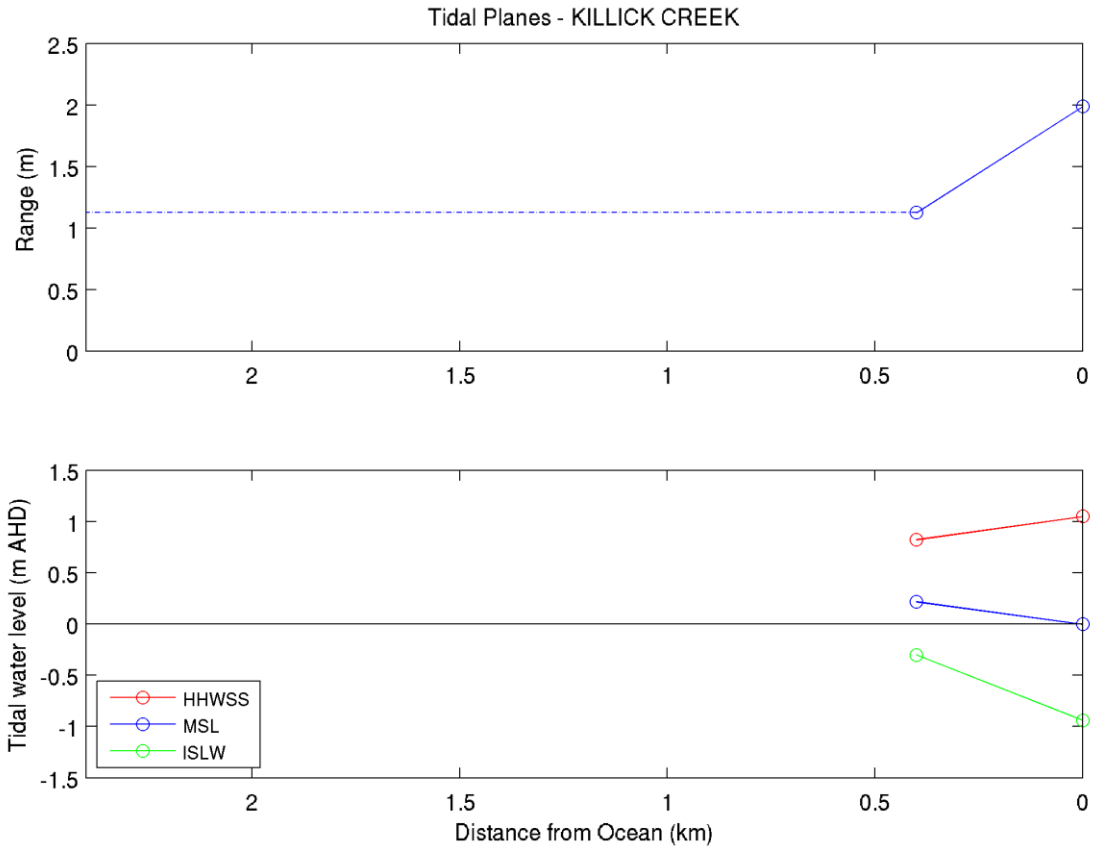

Figure B.50. Plots of tidal planes as a function of distance from ocean for Killick Creek Estuary (No. 041)

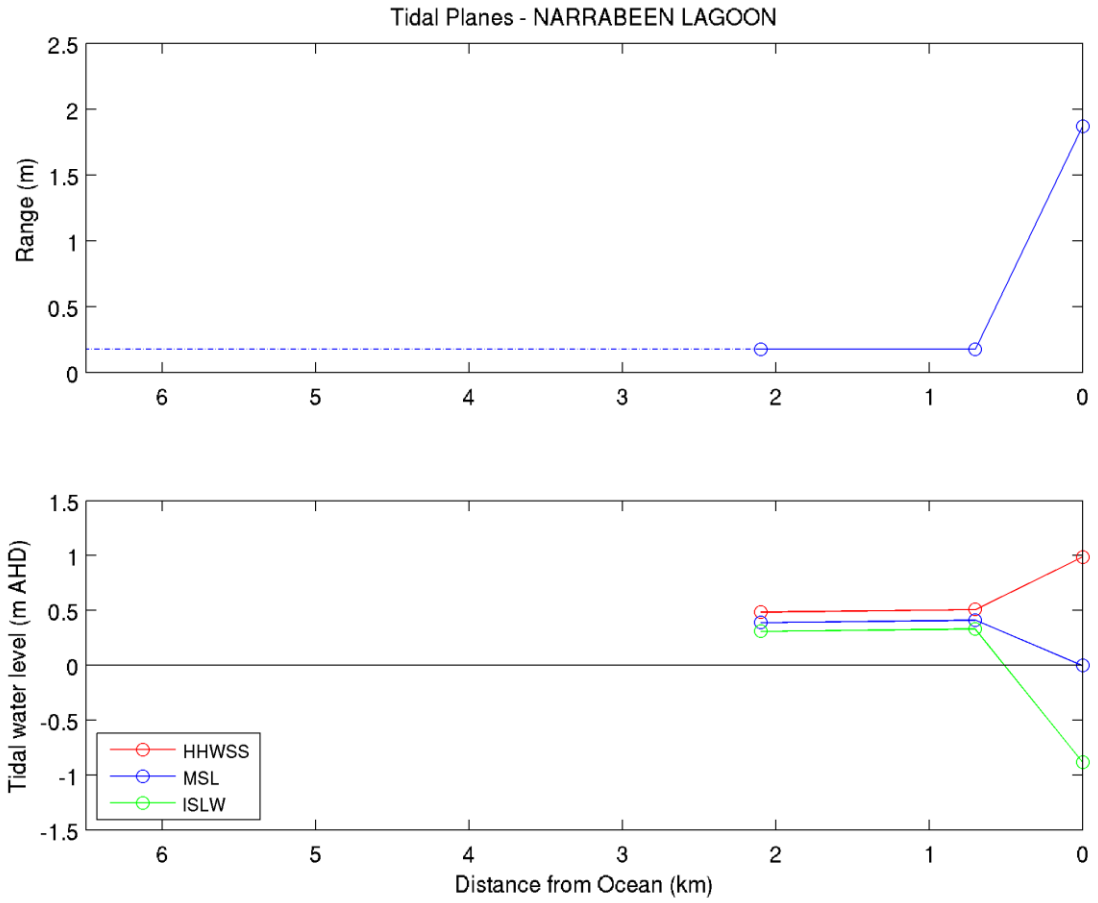

Figure B.51. Plots of tidal planes as a function of distance from ocean for Narrabeen Lagoon Estuary (No. 070)

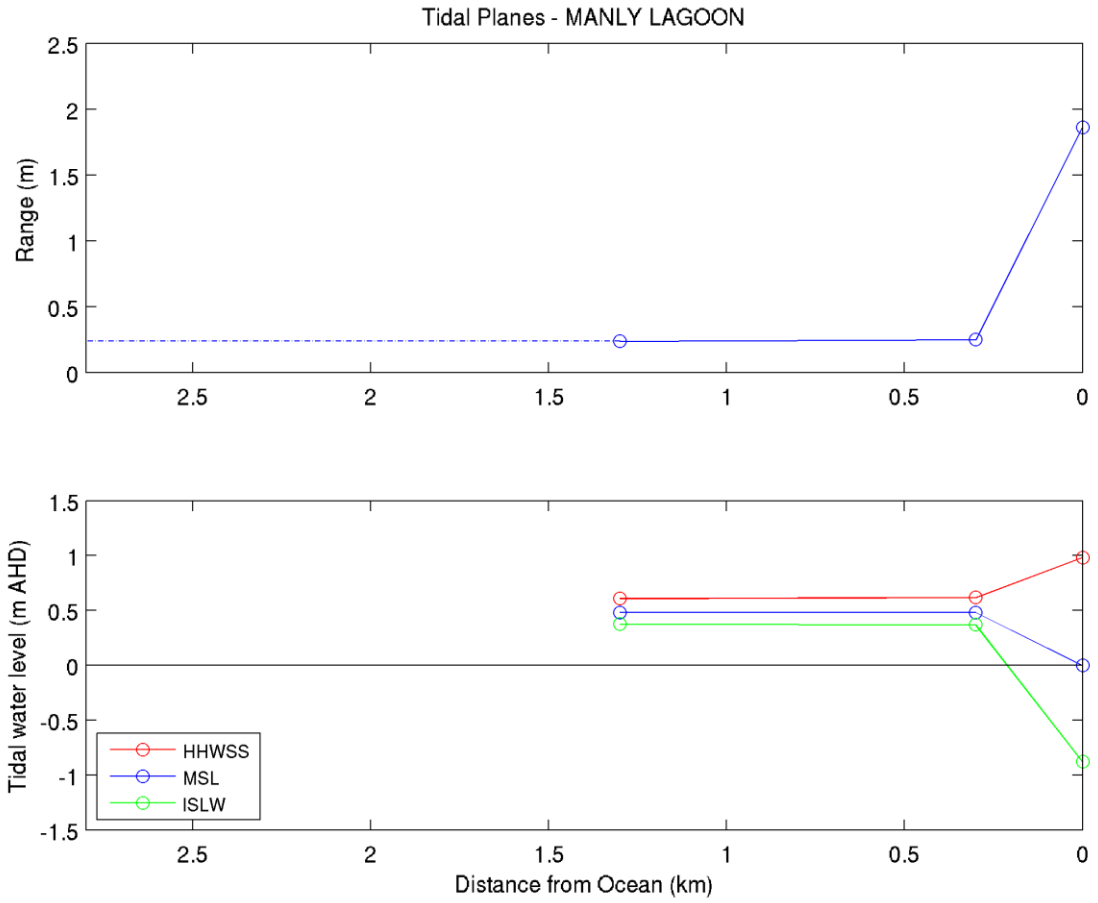

Figure B.52. Plots of tidal planes as a function of distance from ocean for Manly Lagoon Estuary (No. 073)

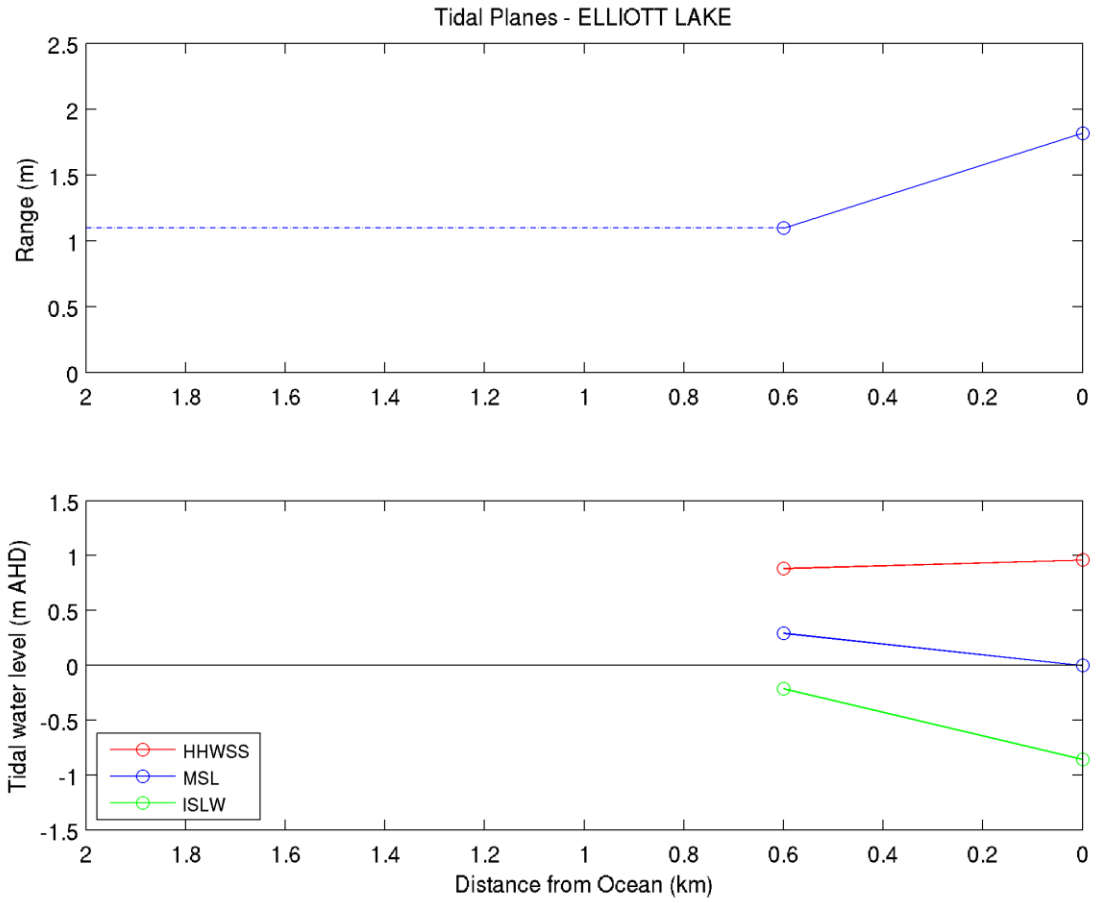

Figure B.53. Plots of tidal planes as a function of distance from ocean for Elliot Lake Estuary (No. 095)

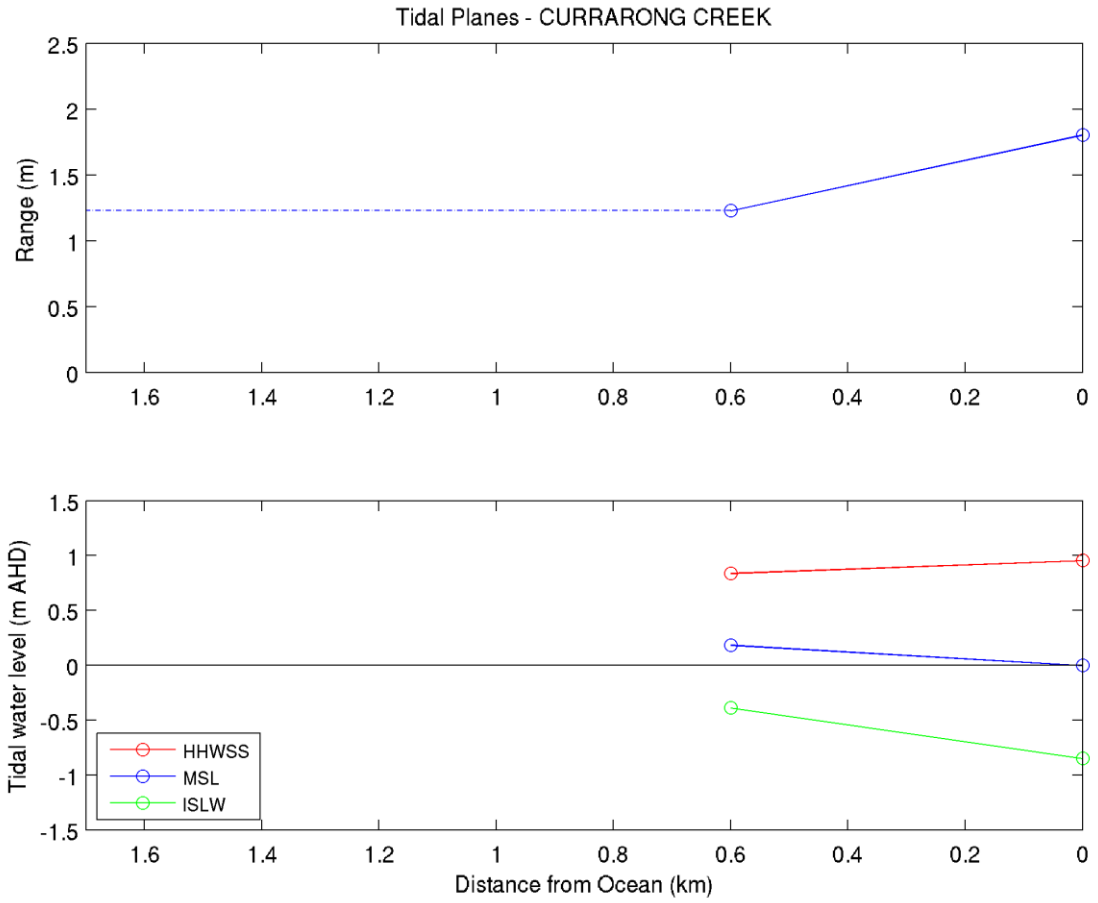

Figure B.54. Plots of tidal planes as a function of distance from ocean for Currarong Creek Estuary (No. 103)

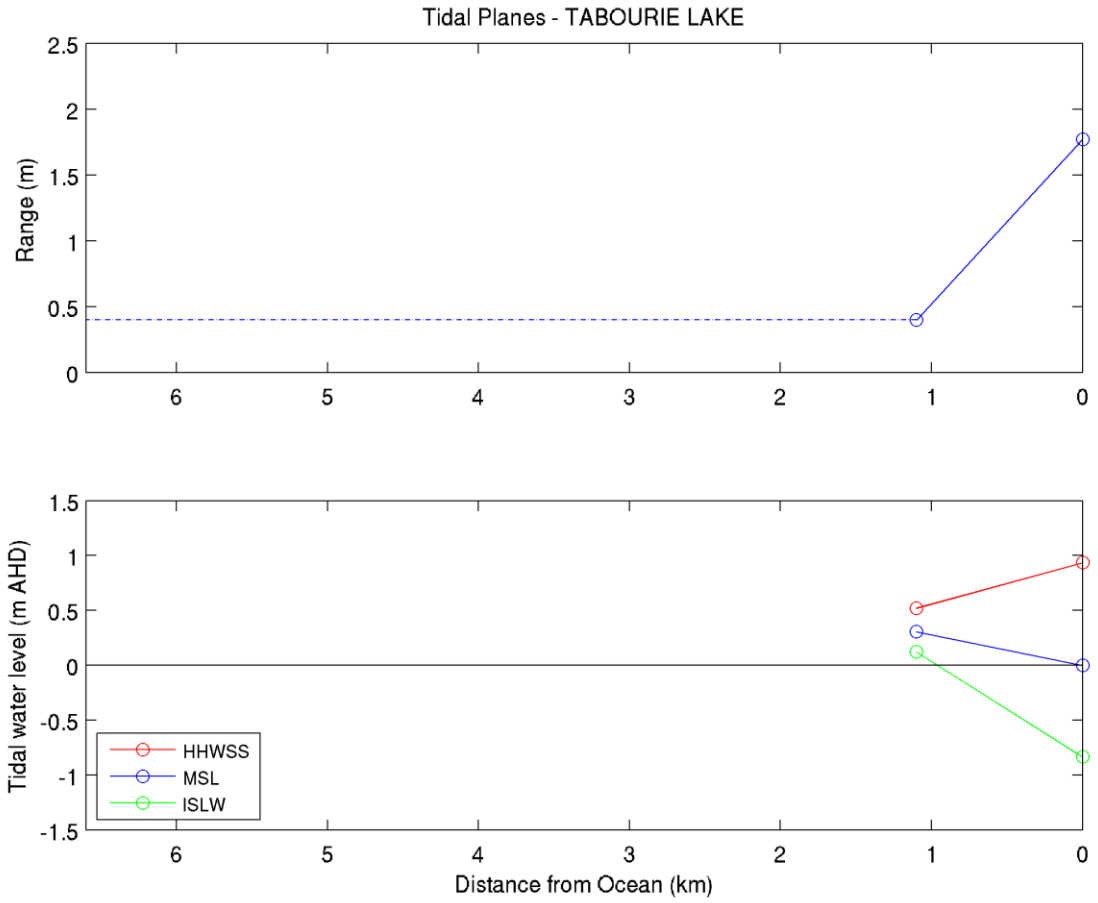

Figure B.55. Plots of tidal planes as a function of distance from ocean for Tabourie Lake Estuary (No. 123)

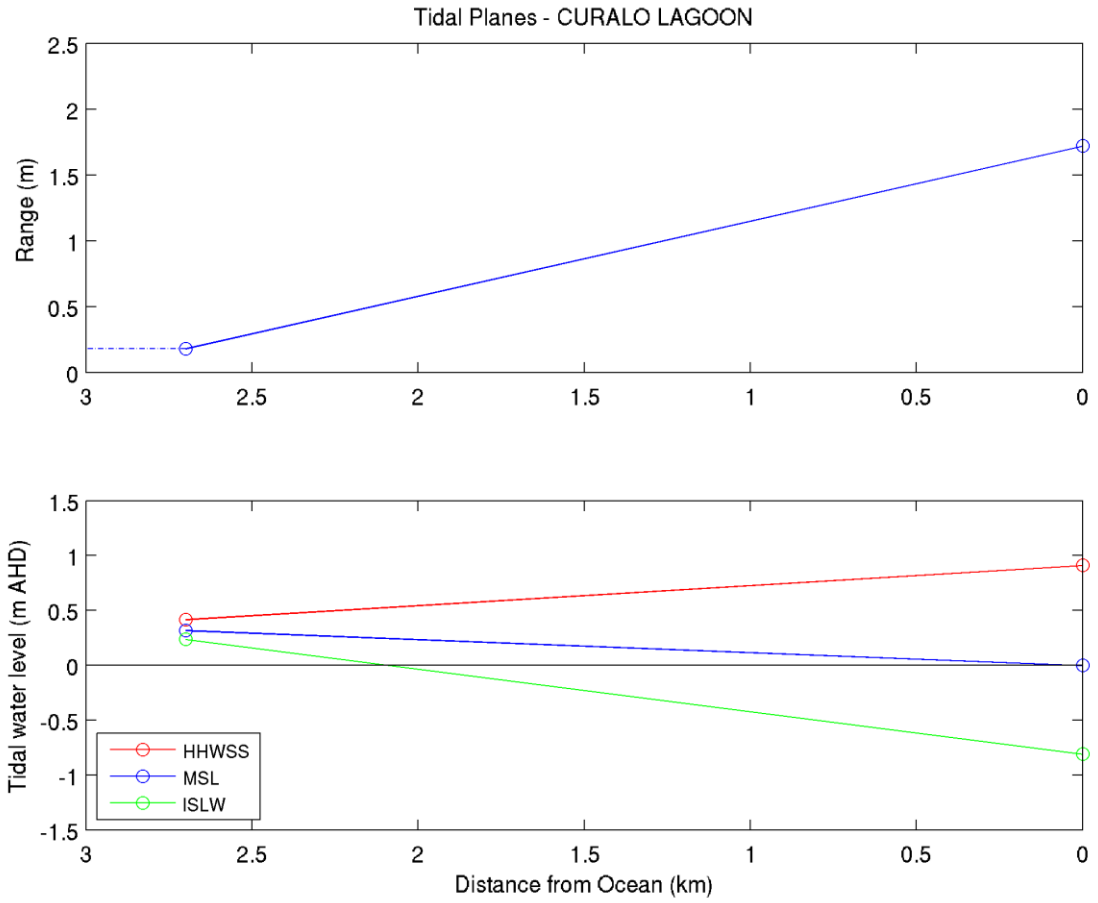

Figure B.56. Plots of tidal planes as a function of distance from ocean for Curalo Lagoon Estuary (No. 171)

NSW estuary categorisation results

Table B.1. Results of categorisation of NSW gauged estuaries using tidal propagation metrics compared with types from Roy et al. (2001)

Estuary no.	Estuary name	Type (Roy et al. 2001)	New type
001	Tweed River	Barrier Estuary	LBE
002	Cudgen Creek	Brackish Barrier Lake	SBE
005	Brunswick River	Barrier Estuary	LBE
009	Richmond River	Barrier Estuary	LBE
011	Evans River	Interbarrier Estuary	SBE
013	Clarence River	Barrier Estuary	LBE
017	Wooli Wooli River	Barrier Estuary	LBE
019	Corindi River	Barrier Estuary	SBE
023	Woolgoolga Lake	Saline Coastal Lagoon	ICOLL
026	Moonee Creek	Interbarrier Estuary	SBE
028	Coffs Creek	Barrier Estuary	SBE
029	Boambee Creek	Barrier Estuary	SBE
032	Bellinger River	Barrier Estuary	LBE
035	Deep Creek	Saline Coastal Lagoon	ICOLL
036	Nambucca River	Barrier Estuary	LBE
037	Macleay River	Barrier Estuary	LBE
040	Korogoro Creek	Interbarrier Estuary	SBE
041	Killick Creek	Saline Coastal Lagoon	ICOLL
043	Hastings River	Barrier Estuary	LBE
046	Camden Haven River	Barrier Estuary	LBE
047	Manning River	Barrier Estuary	LBE
050	Wallis Lake	Barrier Estuary	TL
055	Port Stephens	Drowned Valley Estuary	DRV
056	Hunter River	Barrier Estuary	DRV
058	Lake Macquarie	Barrier Estuary	TL
061	Tuggerah Lake	Barrier Estuary	TL
066	Brisbane Water	Barrier Estuary	LBE
067	Hawkesbury River	Drowned Valley Estuary	DRV
070	Narrabeen Lagoon	Saline Coastal Lagoon	ICOLL
073	Manly Lagoon	Saline Coastal Lagoon	ICOLL
078	Cooks River	Drowned Valley Estuary	DRV
079	Georges River	Drowned Valley Estuary	DRV
081	Port Hacking	Drowned Valley Estuary	DRV
094	Lake Illawarra	Barrier Estuary	TL
095	Elliot Lake	Saline Coastal Lagoon	ICOLL

Estuary no.	Estuary name	Type (Roy et al. 2001)	New type
096	Minnamurra River	Barrier Estuary	SBE
100	Crooked River	Barrier Estuary	SBE
101	Shoalhaven River	Barrier Estuary	LBE
103	Currarong Creek	Saline Coastal Lagoon	ICOLL
113	St Georges Basin	Barrier Estuary	TL
117	Conjola Lake	Barrier Estuary	SBE
118	Narrawallee Inlet	Barrier Estuary	SBE
122	Burrill Lake	Barrier Estuary	SBE
123	Tabourie Lake	Saline Coastal Lagoon	ICOLL
132	Clyde River	Drowned Valley Estuary	DRV
135	Tomaga River	Barrier Estuary	SBE
138	Moruya River	Barrier Estuary	LBE
143	Tuross River	Barrier Estuary	LBE
149	Wagonga Inlet	Barrier Estuary	SBE
156	Wallaga Lake	Barrier Estuary	SBE
157	Bermagui River	Barrier Estuary	SBE
165	Bega River	Barrier Estuary	LBE
169	Merimbula Lake	Barrier Estuary	SBE
170	Pambula River	Barrier Estuary	SBE
171	Curalo Lagoon	Saline Coastal Lagoon	ICOLL
180	Wonboyn River	Barrier Estuary	SBE

Note: DRV = Drowned River Valley; TL = Tidal Lake; SBE = Small Barrier Estuary; LBE = Large Barrier Estuary; ICOLL = Intermittently Open Closed Lakes and Lagoons.

Table B.2. Results of categorisation of NSW non-gauged estuaries using tidal propagation metrics compared with types from Roy et al. (2001)

Estuary No.	Estuary Name	Type (Roy et al. 2001)	New Type
003	Cudgera Creek	Small Coastal Creek	SBE
004	Mooball Creek	Interbarrier Estuary	SBE
016	Sandon River	Barrier Estuary	LBE
030	Bonville Creek	Barrier Estuary	SBE
038	South West Rocks Creek	Saline Coastal Lagoon	SBE
052	Myall River	Brackish Barrier Lake	LBE
053	Karuah River	Drowned River Valley	DRV
054	Tilligerry Creek	Interbarrier Estuary	LBE
074	Middle Harbour Creek	Drowned River Valley	DRV
075	Lane Cove River	Drowned River Valley	DRV
076	Parramatta River	Drowned River Valley	DRV
092	Allans Creek	Saline Coastal Lagoon	EM
104	Cararma Creek	Saline Coastal Lagoon	SBE
107	Currambene Creek	Saline Coastal Lagoon	LBE
131	Cullendulla Creek	Barrier Estuary	SBE
136	Candlagan Creek	Barrier Estuary	SBE
160	Murrah River	Barrier Estuary	SBE
162	Wapengo Lagoon	Barrier Estuary	SBE
164	Nelson Lagoon	Barrier Estuary	SBE
175	Towamba River	Barrier Estuary	SBE

Note: DRV = Drowned River Valley; SBE = Small Barrier Estuary; LBE = Large Barrier Estuary; EM = Embayment.

Water levels for Embayment type estuaries

Table B.3. High High Water Solstice Springs (HHWSS) water levels used for embayment type estuaries in New South Wales

Estuary no.	Estuary name	HHWSS (m)
068	Pittwater	0.990
069	Broken Bay	0.990
077	Port Jackson	0.982
080	Botany Bay	0.973
093	Port Kembla	0.964
112	Jervis Bay	0.951
121	Ulladulla Harbour	0.940
133	Batemans Bay	0.929
177	Twofold Bay	0.912

Berm heights of non-gauged Intermittently Closed and Open Lakes and Lagoons (ICOLLs)

Table B.4. Calculated berm heights for non-gauged ICOLLs in New South Wales

Estuary no.	Estuary name	Grain size (mm)	Berm height (m)
006	Belongil Creek	0.2192	2.0
007	Tallow Creek	0.2108	1.9
008	Broken Head Creek	0.1801	1.8
010	Salty Lagoon	0.1941	1.9
012	Jerusalem Creek	0.2269	2.0
014	Lake Arragan	0.1646	1.8
015	Cakora Lagoon	0.1646	1.8
018	Station Creek	0.1425	1.7
020	Pipe Clay Creek	0.1633	1.8
021	Arrawarra Creek	0.1458	1.7
022	Darkum Creek	0.1495	1.7
024	Flat Top Point Creek	0.1862	1.8
025	Hearns Lake	0.1612	1.8
027	Pine Brush Creek	0.6475	3.7
031	Bundageree Creek	0.2217	2.0
033	Dalhousie Creek	0.2672	2.2
034	Oyster Creek	0.2411	2.1
039	Saltwater Creek (Frederickton)	0.2401	1.9
042	Goolawah Lagoon	0.2388	2.1
044	Cathie Creek	0.2973	2.4
045	Duchess Gully	0.2437	2.1
048	Khappinghat Creek	0.3002	2.3
049	Black Head Lagoon	0.2799	2.2
051	Smiths Lake	0.4147	2.7
057	Glenrock Lagoon	0.3197	2.4
059	Middle Camp Creek	0.2738	2.2
060	Moonee Beach Creek	0.2657	2.2
062	Wamberal Lagoon	0.4620	3.0
063	Terrigal Lagoon	0.2579	2.1
064	Avoca Lake	0.3169	2.4
065	Cockrone Lake	0.4386	2.8
071	Dee Why Lagoon	0.2438	2.2
072	Curl Curl Lagoon	0.2838	2.5

Estuary no.	Estuary name	Grain size (mm)	Berm height (m)
082	Wattamolla Creek	0.4118	2.7
083	Hargraves Creek	0.4118	2.7
084	Stanwell Creek	0.4118	2.7
085	Flanagans Creek	0.3363	2.4
086	Woodlands Creek	0.3363	2.4
087	Slacky Creek	0.3947	2.7
088	Bellambi Gully	0.2864	2.2
089	Bellambi Lake	0.2188	2.0
090	Towradgi Creek	0.2188	2.0
091	Fairy Creek	0.3164	2.4
097	Spring Creek	0.3231	2.4
098	Munna Munnora Creek	0.3373	2.4
099	Werri Lagoon	0.3681	2.8
102	Wollumboola Lake	0.3226	2.9
105	Wowly Gully	0.1260	1.6
106	Callala Creek	0.2126	2.0
108	Moona Moona Creek	0.2959	2.3
109	Flat Rock Creek	0.2990	2.3
110	Captains Beach Lagoon	0.2743	2.2
111	Telegraph Creek	0.2743	2.2
114	Swan Lake	0.3732	2.6
115	Berrara Creek	0.3204	2.4
116	Nerrindillah Creek	0.3869	2.6
119	Mollymook Creek	0.2717	2.2
120	Millards Creek	0.7130	3.9
124	Termeil Lake	0.3489	2.5
125	Meroo Lake	0.2930	2.3
126	Willinga Lake	0.2072	1.9
127	Butlers Creek	0.2395	2.1
128	Durras Lake	0.2491	2.1
129	Durras Creek	0.1645	1.8
130	Maloneys Creek	0.1488	1.7
134	Saltwater Creek (Rosedale)	0.2824	2.2
137	Bengello Creek	0.2637	2.2
139	Congo Creek	0.2858	2.2
140	Meringo Creek	0.2474	2.1
141	Kellys Lake	0.2382	2.1
142	Coila Lake	0.3370	2.4

Estuary no.	Estuary name	Grain size (mm)	Berm height (m)
144	Lake Brunderee	0.2201	2.0
145	Lake Tarourga	0.2502	2.1
146	Lake Brou	0.2502	2.7
147	Lake Mummuga	0.2502	2.1
148	Kianga Lake	0.3078	1.9
150	Little Lake (Narooma)	0.2663	2.2
151	Bullengella Lake	0.2663	2.4
152	Nangudga Lake	0.2663	2.2
153	Corunna Lake	0.2574	2.1
154	Tilba Tilba Lake	0.2762	2.2
155	Little Lake (Wallaga)	0.2762	2.2
158	Baragoot Lake	0.3403	2.5
159	Cuttagee Lake	0.2900	2.3
161	Bunga Lagoon	0.2886	2.3
163	Middle Lagoon	0.3463	2.5
166	Wallagoot Lake	0.3084	2.3
167	Bournda Lagoon	0.3084	2.3
168	Back Lagoon	0.4161	2.8
172	Shadrachs Creek	0.7071	3.9
173	Nullica River	0.7071	3.9
174	Boydtown Creek	0.7071	3.9
176	Fisheries Creek	0.7071	3.9
178	Saltwater Creek (Eden)	0.4204	2.8
179	Woodburn Creek	0.4204	2.8
181	Merrica River	0.4204	2.8
182	Table Creek	0.4204	2.8
183	Nadgee River	0.4204	2.8
184	Nadgee Lake	0.4204	2.8

Note: Berm heights marked with an asterix (*) are taken from Hanslow et al. 2000.

Estuary Dynamic Estuary Model (DEM) information

Table B.5. Resolution and source of DEM used for each NSW estuary

Estuary no.	Estuary	LiDAR dataset	Res(m)
001	Tweed River	TweedHeads2014	1
002	Cudgen Creek	TweedHeads2014	1
003	Cudgera Creek	TweedHeads2014	1
004	Mooball Creek	TweedHeads2014	1
005	Brunswick River	ByronBay2010	1
006	Belongil Creek	ByronBay2010	1
007	Tallow Creek	ByronBay2010	1
008	Broken Head Creek	ByronBay2010	1
009	Richmond River	Ballina2010 + Coraki2010 + Yamba2010 + Lismore2010	1
010	Salty Lagoon	Ballina2010	1
011	Evans River	Ballina2010 + Yamba2010	1
012	Jerusalem Creek	Yamba2010	1
013	Clarence River	Grafton2010 + Yamba2010 + Wooli2010	1
014	Lake Arragan	Yamba2010	1
015	Cakora Lagoon	Wooli2010	1
016	Sandon River	Wooli2010	1
017	Wooli Wooli River	Wooli2010	1
018	Station Creek	Wooli2010	1
019	Corindi River	Wooli2010 + CoffsHarbour2013	1
020	Pipe Clay Creek	CoffsHarbour2013	1
021	Arrawarra Creek	CoffsHarbour2013	1
022	Darkum Creek	CoffsHarbour2013	1
023	Woolgoolga Lake	CoffsHarbour2013	1
024	Flat Top Point Creek	CoffsHarbour2013	1
025	Hearns Lake	CoffsHarbour2013	1
026	Moonee Creek	CoffsHarbour2013	1
027	Pine Brush Creek	CoffsHarbour2013	1
028	Coffs Creek	CoffsHarbour2013	1
029	Boambee Creek	CoffsHarbour2013	1
030	Bonville Creek	Nambucca2009	1
031	Bundageree Creek	Nambucca2009	1
032	Bellinger River	Nambucca2009	1
033	Dalhousie Creek	Nambucca2009	1
034	Oyster Creek	Nambucca2009	1

Estuary no.	Estuary	LiDAR dataset	Res(m)
035	Deep Creek	Nambucca2009	1
036	Nambucca River	Nambucca2009	1
037	Macleay River	Kempsey2009	1
038	South West Rocks Creek	Kempsey2009	1
039	Saltwater Creek (Frederickton)	Kempsey2009	1
040	Korogoro Creek	Kempsey2009	1
041	Killick Creek	Kempsey2009	1
042	Goolawah Lagoon	Kempsey2009	1
043	Hastings River	PortMacquarie2012 + Kempsey2009	1
044	Cathie Creek	PortMacquarie2012	1
045	Duchess Gully	PortMacquarie2012	1
046	Camden Haven River	Port Macquarie2012 + Taree 2012	1
047	Manning River	Taree 2012 + Forster 2012	1
048	Khappinghat Creek	Forster2012	1
049	Black Head Lagoon	Forster2012	1
050	Wallis Lake	Forster 2012 + Bulahdelah2013	1
051	Smiths Lake	Bulahdelah2013	1
052	Myall River	PortStephens2012 + Bulahdelah2013	1
053	Karuah River	PortStephens2012	1
054	Tilligerry Creek	PortStephens2012	1
055	Port Stephens	PortStephens2012	1
056	Hunter River	CentralCoast2007 + Port Stephens Council LiDAR	2
057	Glenrock Lagoon	CentralCoast2007	2
058	Lake Macquarie	CentralCoast2007	2
059	Middle Camp Creek	CentralCoast2007	2
060	Moonee Beach Creek	CentralCoast2007	2
061	Tuggerah Lake	CentralCoast2007	2
062	Wamberal Lagoon	HawkesburyNORTH11	1
063	Terrigal Lagoon	HawkesburyNORTH11	1
064	Avoca Lake	HawkesburyNORTH11	1
065	Cockrone Lake	HawkesburyNORTH11	1
066	Brisbane Water	HawkesburyNORTH2011	1
067	Hawkesbury River	Nth & Sth Hawkesbury2011 + Nepean E&W2011	1
068	Pittwater	HawkesburySOUTH2011	1
069	Broken Bay	Nth & Sth Hawkesbury2011	1

Estuary no.	Estuary	LiDAR dataset	Res(m)
070	Narrabeen Lagoon	HawkesburySOUTH2011	1
071	Dee Why Lagoon	SydneyNorth2013	1
072	Curl Curl Lagoon	SydneyNorth2013	1
073	Manly Lagoon	SydneyNorth2013	1
074	Middle Harbour Creek	SydneyNorth2013	1
075	Lane Cove River	SydneyNorth2013	1
076	Parramatta River	SydneyNorth2013	1
077	Port Jackson	SydneyNorth2013	1
078	Cooks River	SydneySouth2013	1
079	Georges River	SydneySouth2013	1
080	Botany Bay	SydneyNorth2013 + SydneySouth2013	1
081	Port Hacking	SydneySouth2013	1
082	Wattamolla Creek	SydneySouth2013	1
083	Hargraves Creek	SydneySouth2013	1
084	Stanwell Creek	SydneySouth2013	1
085	Flanagans Creek	Wollongong2013	1
086	Woodlands Creek	Wollongong2013	1
087	Slacky Creek	Wollongong2013	1
088	Bellambi Gully	Wollongong2013	1
089	Bellambi Lake	Wollongong2013	1
090	Towradgi Creek	Wollongong2013	1
091	Fairy Creek	Wollongong2013	1
092	Allans Creek	Wollongong2013	1
093	Port Kembla	Wollongong2013	1
094	Lake Illawarra	Wollongong2013 + Kiama2011	1
095	Elliot Lake	Kiama2011	1
096	Minnamurra River	Kiama2011	1
097	Spring Creek	Kiama2011	1
098	Munna Munnora Creek	Kiama2011	1
099	Werri Lagoon	Kiama2011	1
100	Crooked River	Kiama2011	1
101	Shoalhaven River	Kiama2011 + Nowra2010	1
102	Wollumboola Lake	Nowra2010	1
103	Currarong Creek	Nowra2010	1
104	Cararma Creek	Nowra2010	1
105	Wowly Gully	Nowra2010	1

Estuary no.	Estuary	LiDAR dataset	Res(m)
106	Callala Creek	Nowra2010	1
107	Currambene Creek	Nowra2010	1
108	Moona Moona Creek	Nowra2010	1
109	Flat Rock Creek	Nowra1210	1
110	Captains Beach Lagoon	Nowra1210	1
111	Telegraph Creek	Nowra1210	1
112	Jervis Bay	Nowra2010	1
113	St Georges Basin	Nowra2010	1
114	Swan Lake	Nowra2010	1
115	Berrara Creek	Nowra2010 + Ulladulla2011	1
116	Nerrindillah Creek	Nowra2010 + Ulladulla2011	1
117	Conjola Lake	Ulladulla2011	1
118	Narrawallee Inlet	Ulladulla2011	1
119	Mollymook Creek	Ulladulla2011	1
120	Millards Creek	Ulladulla2011	1
121	Ulladulla	Ulladulla2011	1
122	Burrill Lake	Ulladulla2011	1
123	Tabourie Lake	Ulladulla2011	1
124	Termeil Lake	Ulladulla2011	1
125	Meroo Lake	Ulladulla2011	1
126	Willinga Lake	Ulladulla2011	1
127	Butlers Creek	Ulladulla2011	1
128	Durras Lake	Ulladulla2011 + BatemansBay2011	1
129	Durras Creek	Ulladulla2011 + BatemansBay2011	1
130	Maloneys Creek	BatemansBay2011	1
131	Cullendulla Creek	BatemansBay2011	1
132	Clyde River	BatemansBay2011	1
133	Batemans Bay	BatemansBay2011	1
134	Saltwater Creek (Rosedale)	BatemansBay2011	1
135	Tomaga River	BatemansBay2011	1
136	Candlagan Creek	BatemansBay2011	1
137	Bengello Creek	BatemansBay2011	1
138	Moruya River	BatemansBay2011	1
139	Congo Creek	BatemansBay2011	1
140	Meringo Creek	BatemansBay2011	1

Estuary no.	Estuary	LiDAR dataset	Res(m)
141	Kellys Lake	Narooma2011	1
142	Coila Lake	Narooma2011	1
143	Tuross River	Narooma2011	1
144	Lake Brunderee	Narooma2011	1
145	Lake Tarourga	Narooma2011	1
146	Lake Brou	Narooma2011	1
147	Lake Mummuga	Narooma2011	1
148	Kianga Lake	Narooma2011	1
149	Wagonga Inlet	Narooma2011	1
150	Little Lake (Narooma)	Narooma2011	1
151	Bullengella Lake	Narooma2011	1
152	Nangudga Lake	Narooma2011	1
153	Corunna Lake	Narooma2011	1
154	Tilba Tilba Lake	Narooma2011 + Bega2008	1
155	Little Lake (Wallaga)	Narooma2011 + Bega2008	1
156	Wallaga Lake	Bega2008	1
157	Bermagui River	Bega2008	1
158	Baragoot Lake	Bega2008	1
159	Cuttagee Lake	Bega2008	1
160	Murrah River	Bega2008	1
161	Bunga Lagoon	Bega2008	1
162	Wapengo Lagoon	Bega2008	1
163	Middle Lagoon	Bega2008	1
164	Nelson Lagoon	Bega2008	1
165	Bega River	Bega2008	1
166	Wallagoot Lake	Merimbula2013 + Bega2008	1
167	Bournda Lagoon	Merimbula2013	1
168	Back Lagoon	Merimbula2013	1
169	Merimbula Lake	Merimbula2013	1
170	Pambula River	Merimbula2013	1
171	Curalo Lagoon	Merimbula2013	1
172	Shadrachs Creek	Merimbula2013	1
173	Nullica River	Merimbula2013	1
174	Boydtown Creek	Merimbula2013	1
175	Towamba River	Merimbula2013 + Bega2008	1
176	Fisheries Creek	Merimbula2013 + Wonboyn2011	1
177	Twofold Bay	Merimbula2013 + Wonboyn2011	1

Estuary no.	Estuary	LiDAR dataset	Res(m)
178	Saltwater Creek (Eden)	Wonboyn2011	1
179	Woodburn Creek	Wonboyn2011	1
180	Wonboyn River	Wonboyn2011	1
181	Merrica River	Wonboyn2011	1
182	Table Creek	Wonboyn2011	1
183	Nadgee River	Wonboyn2011	1
184	Nadgee Lake	Wonboyn2011	1