

Tsunami-Tide Interactions

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Cook Inlet region



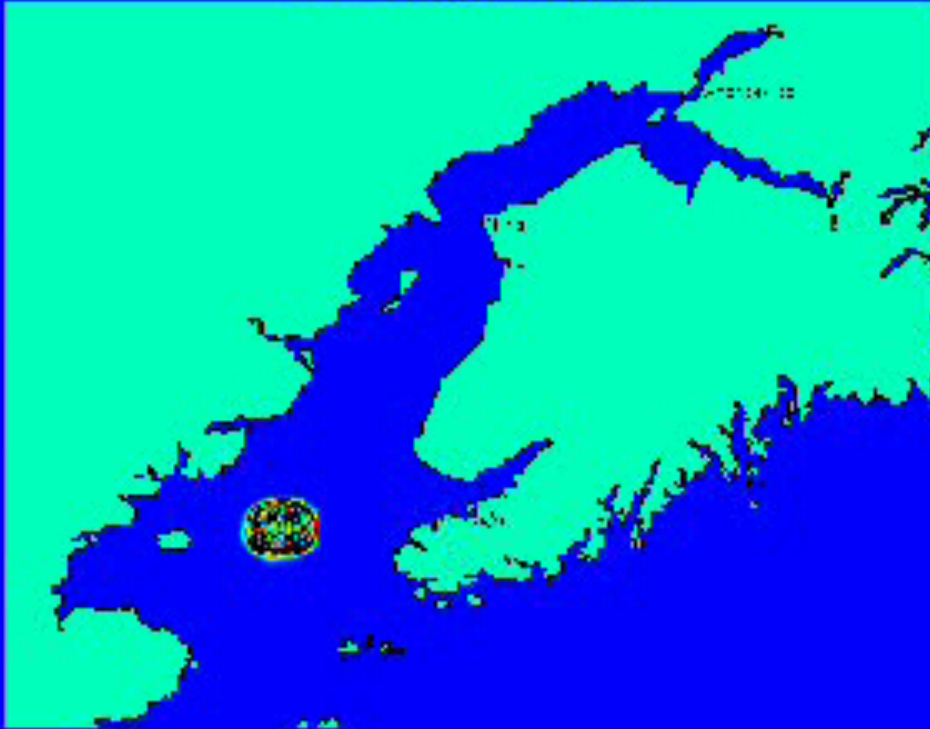
Depth: ~20m

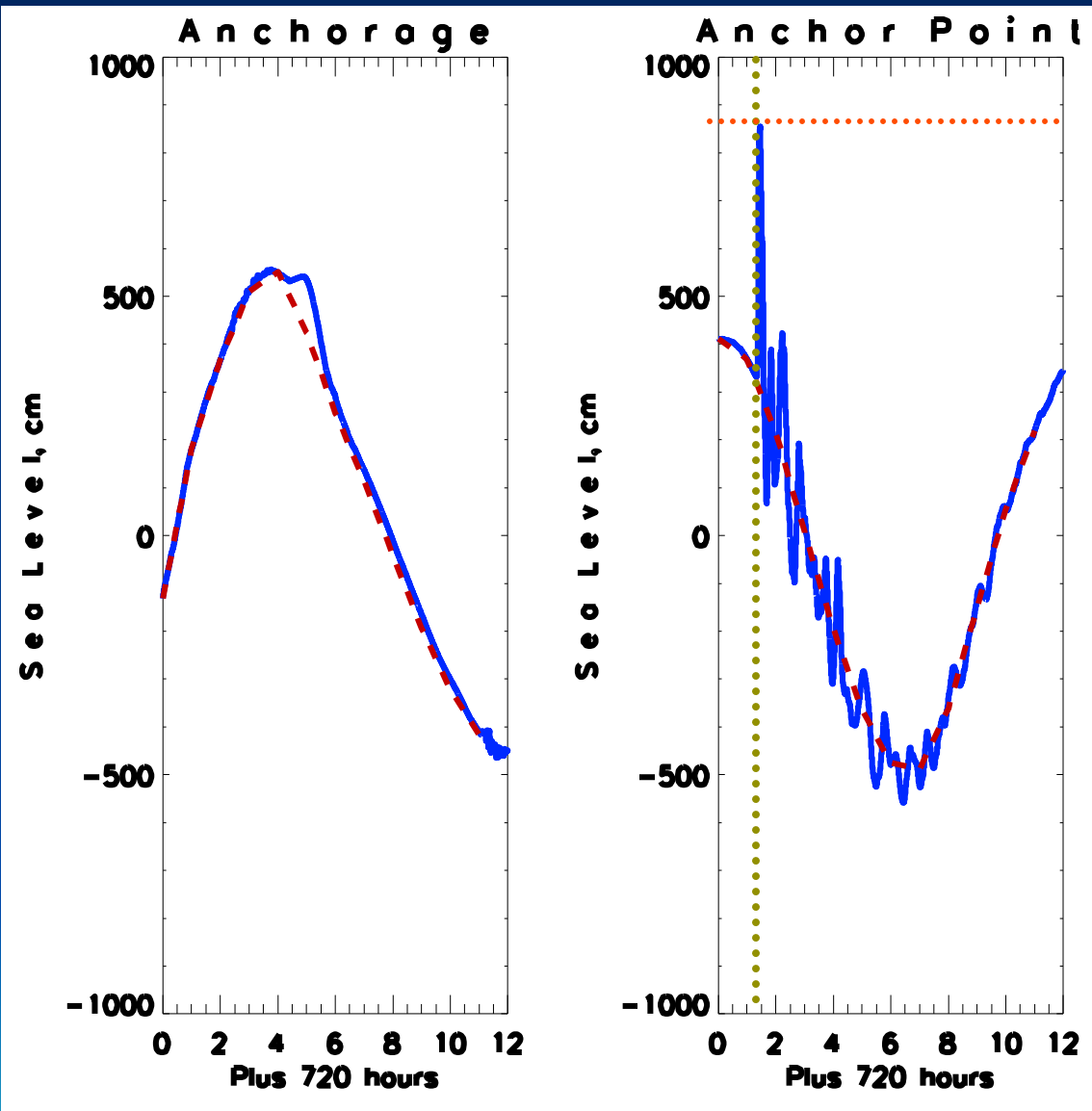
Length: ~350km

Anchorage

Anchor Point

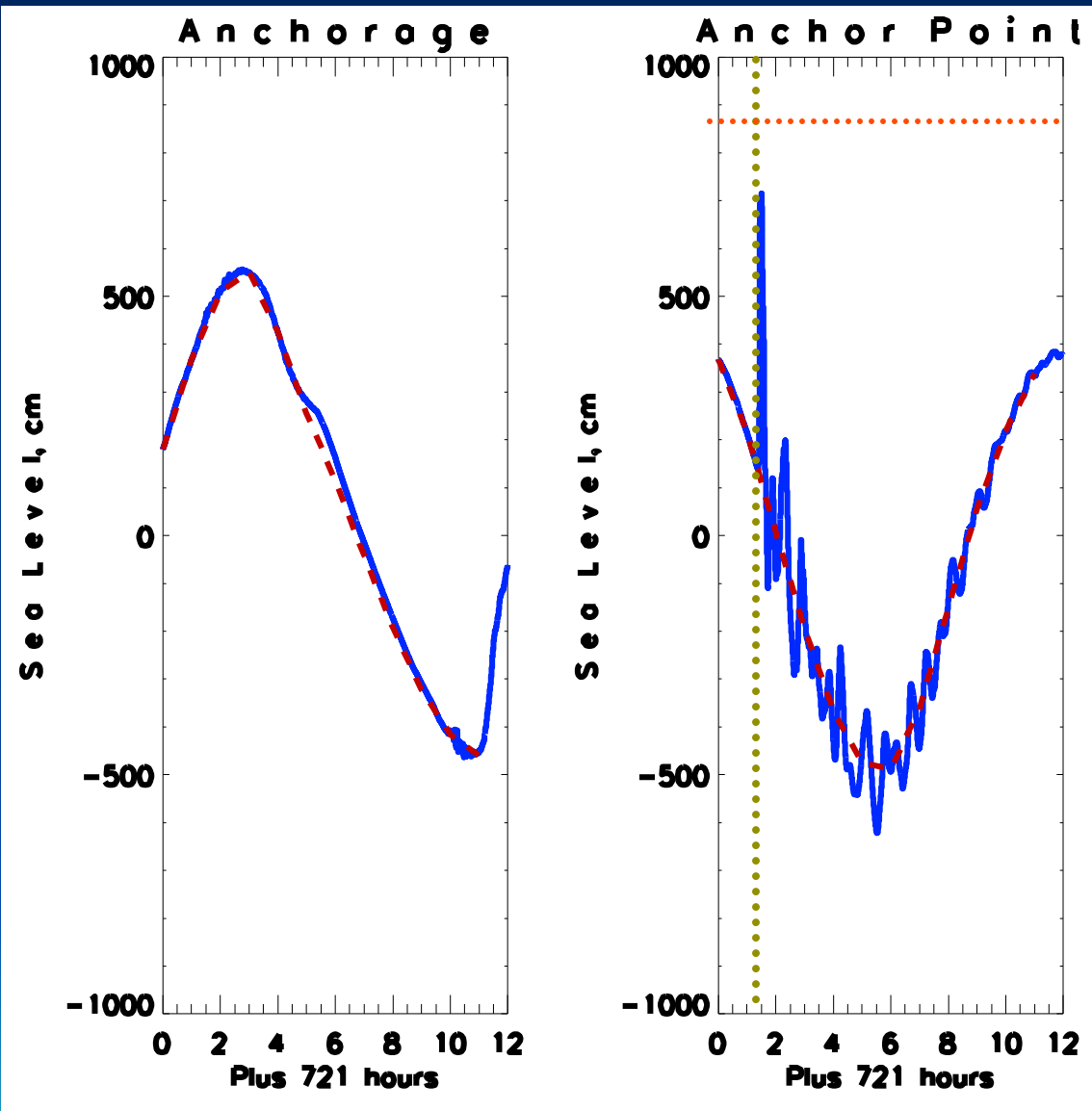
Cook Inlet tsunami





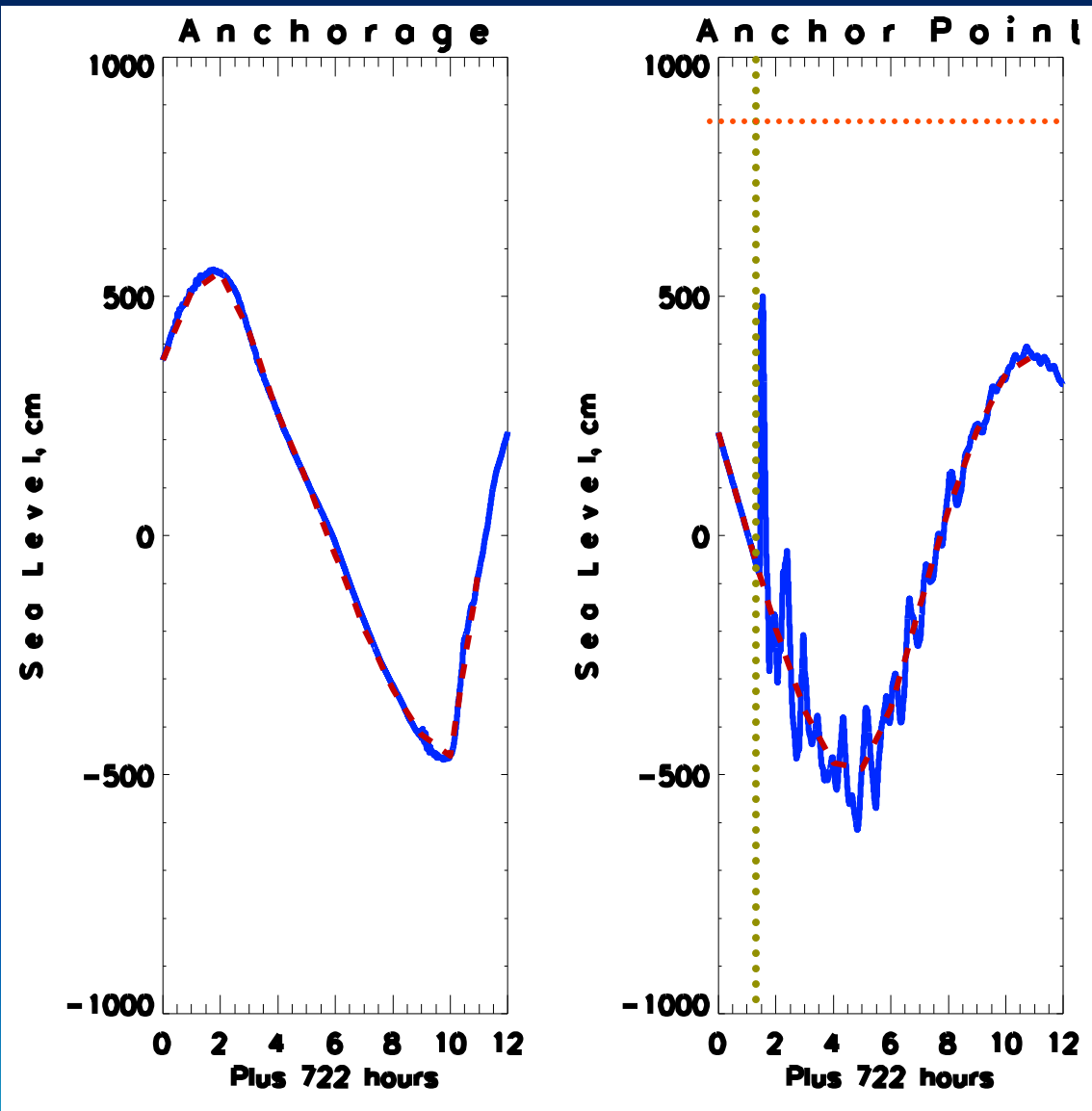
Blue –
tide and
tsunami

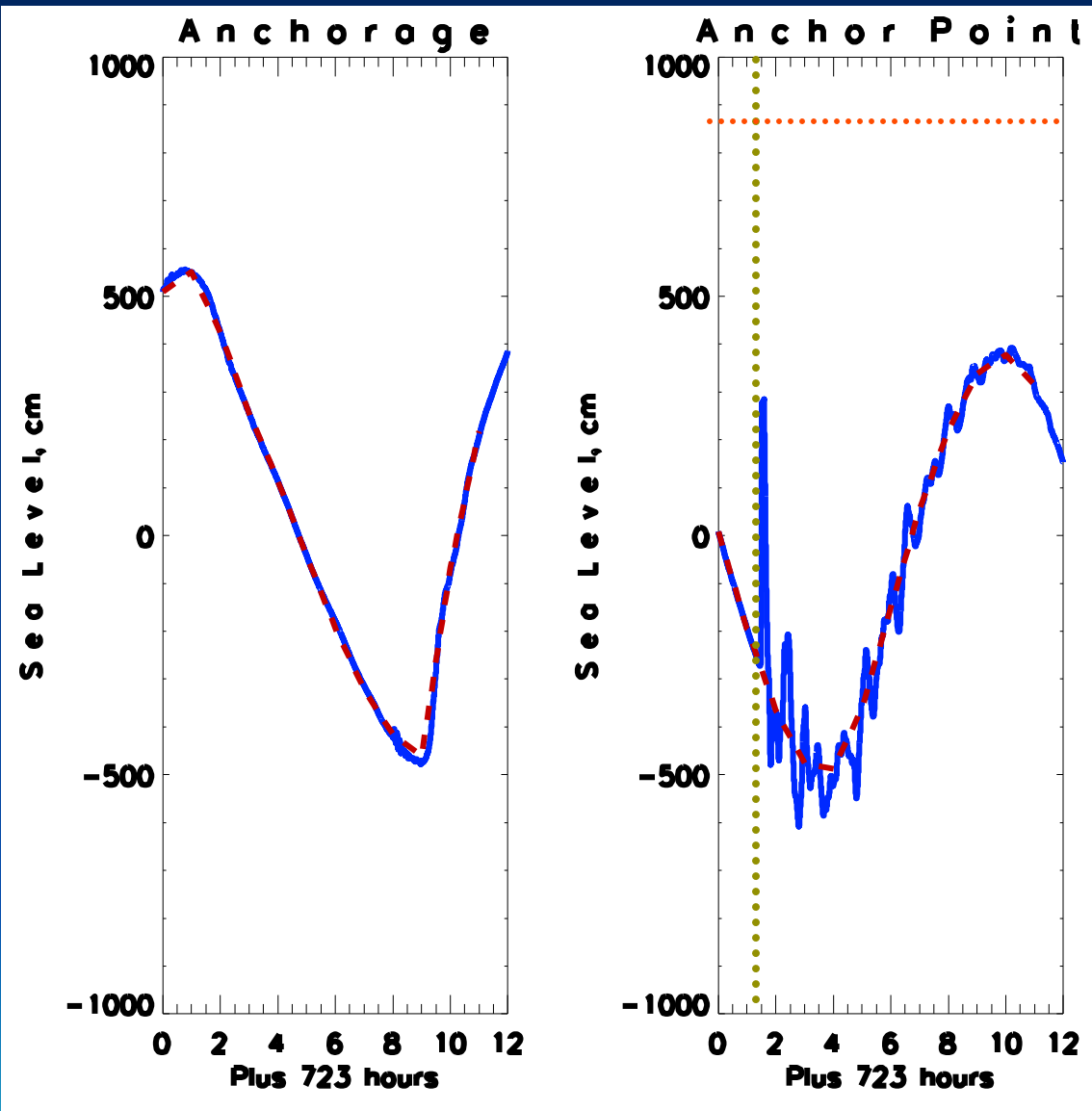
Red –
tide only



Blue –
tide and
tsunami

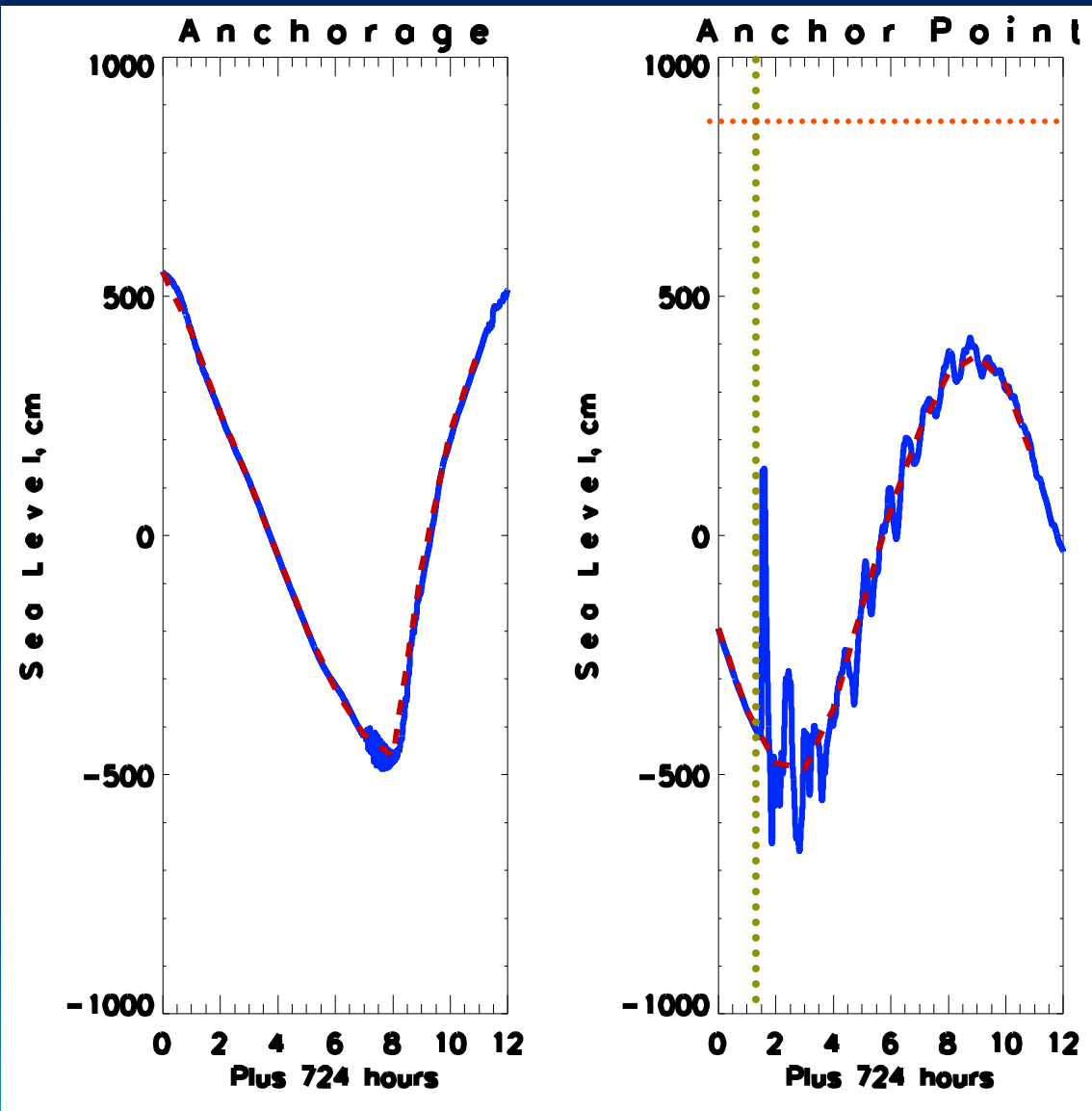
Red –
tide only





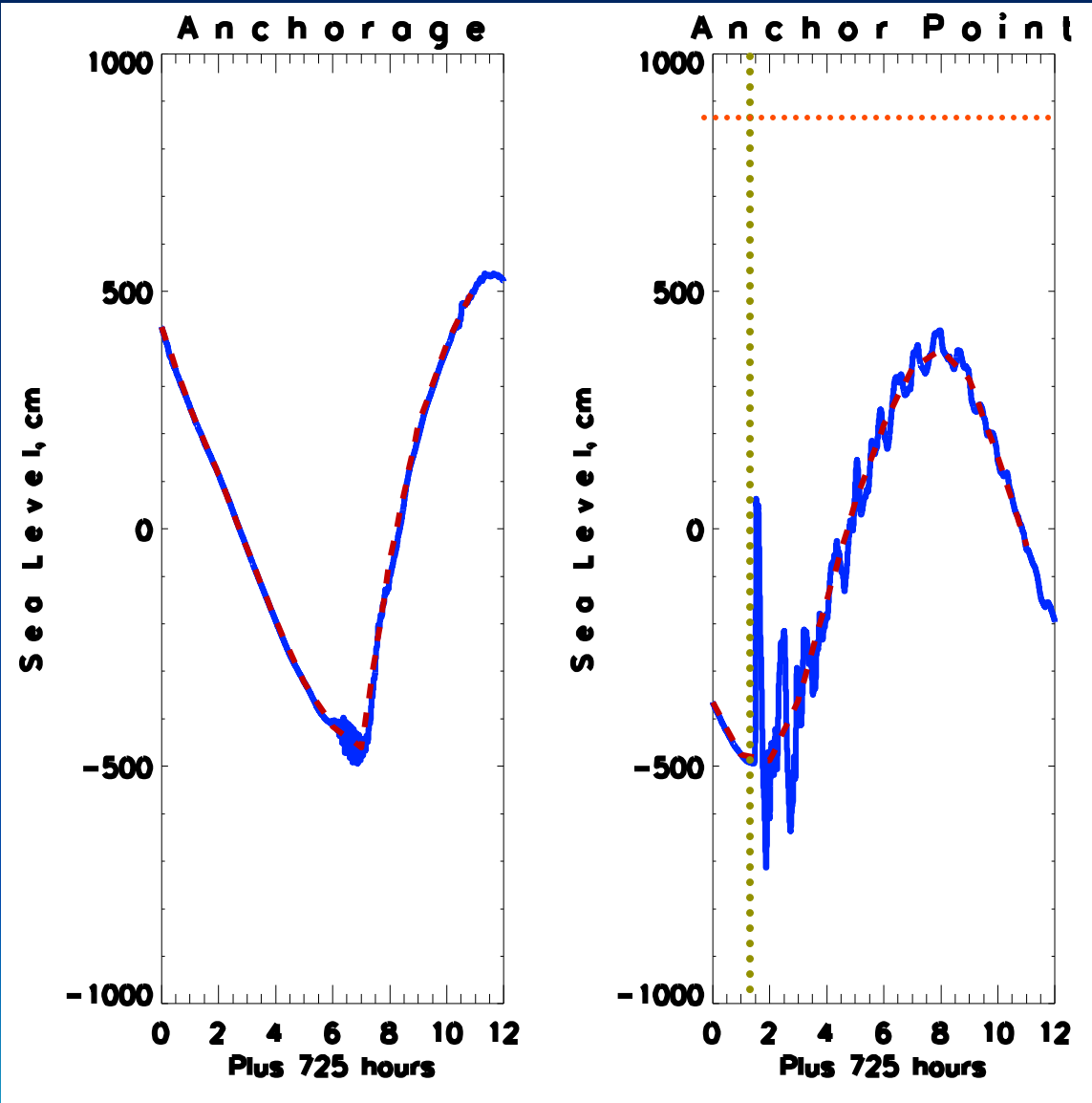
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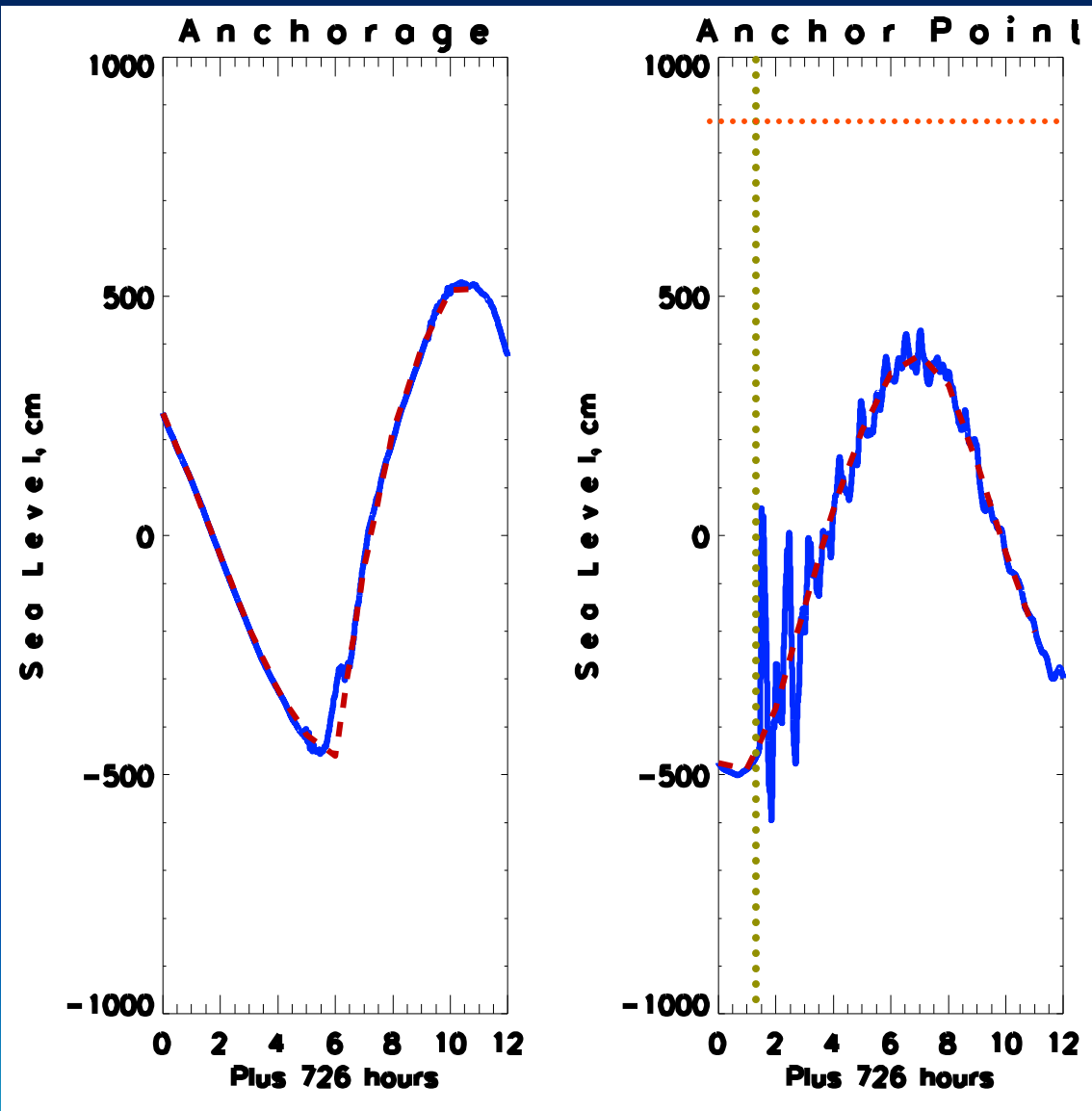
Red –
tide only

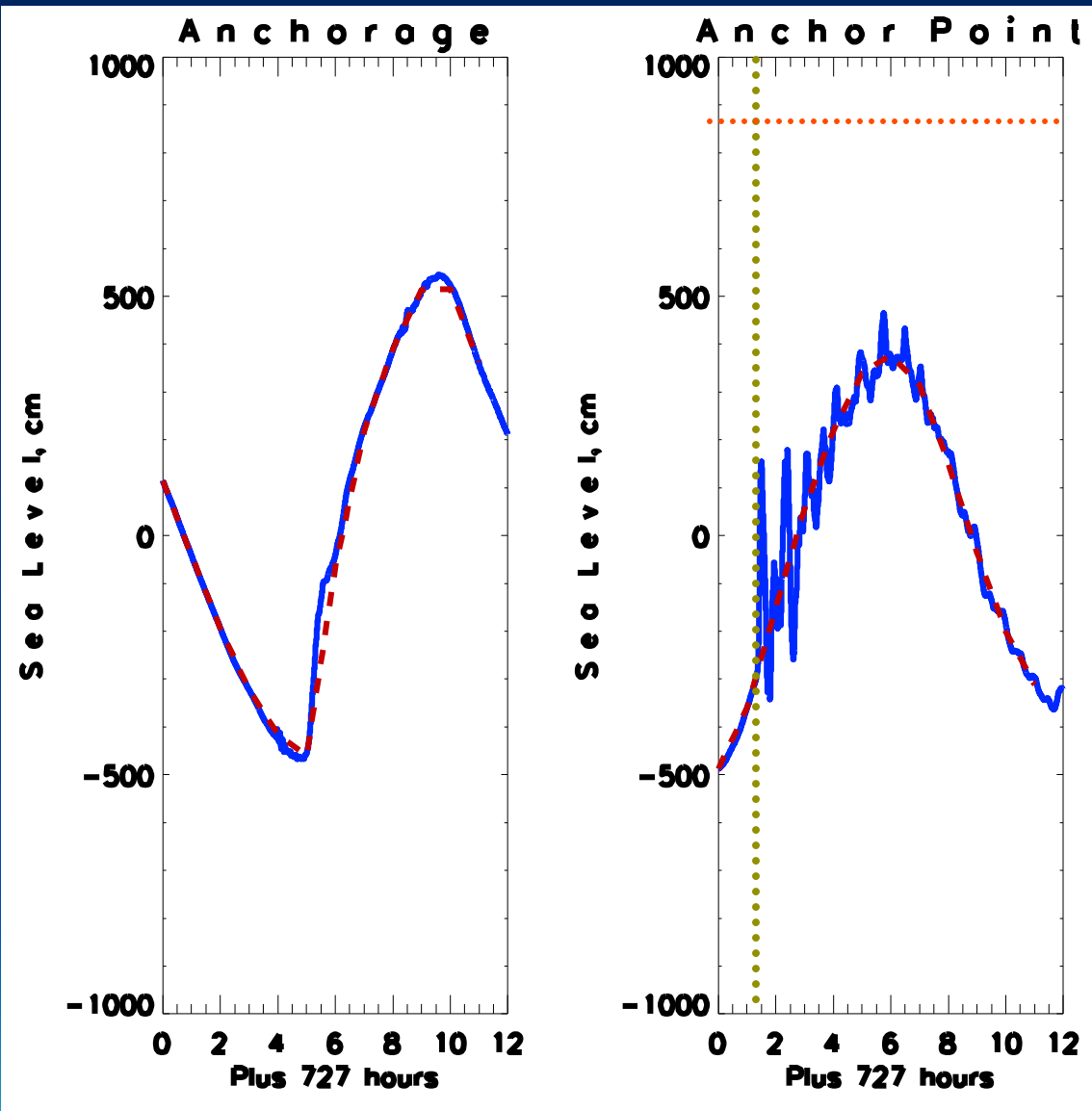


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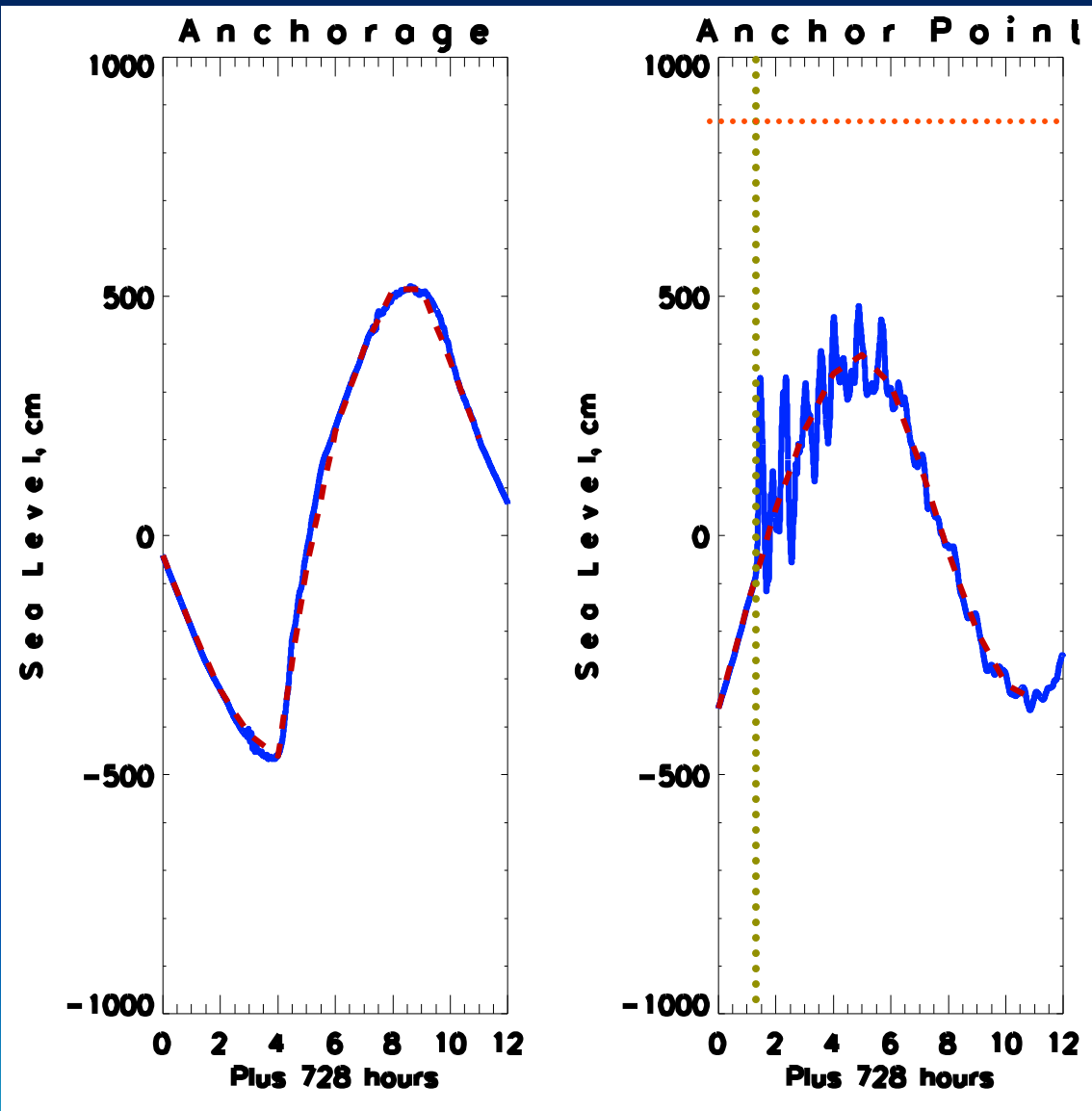


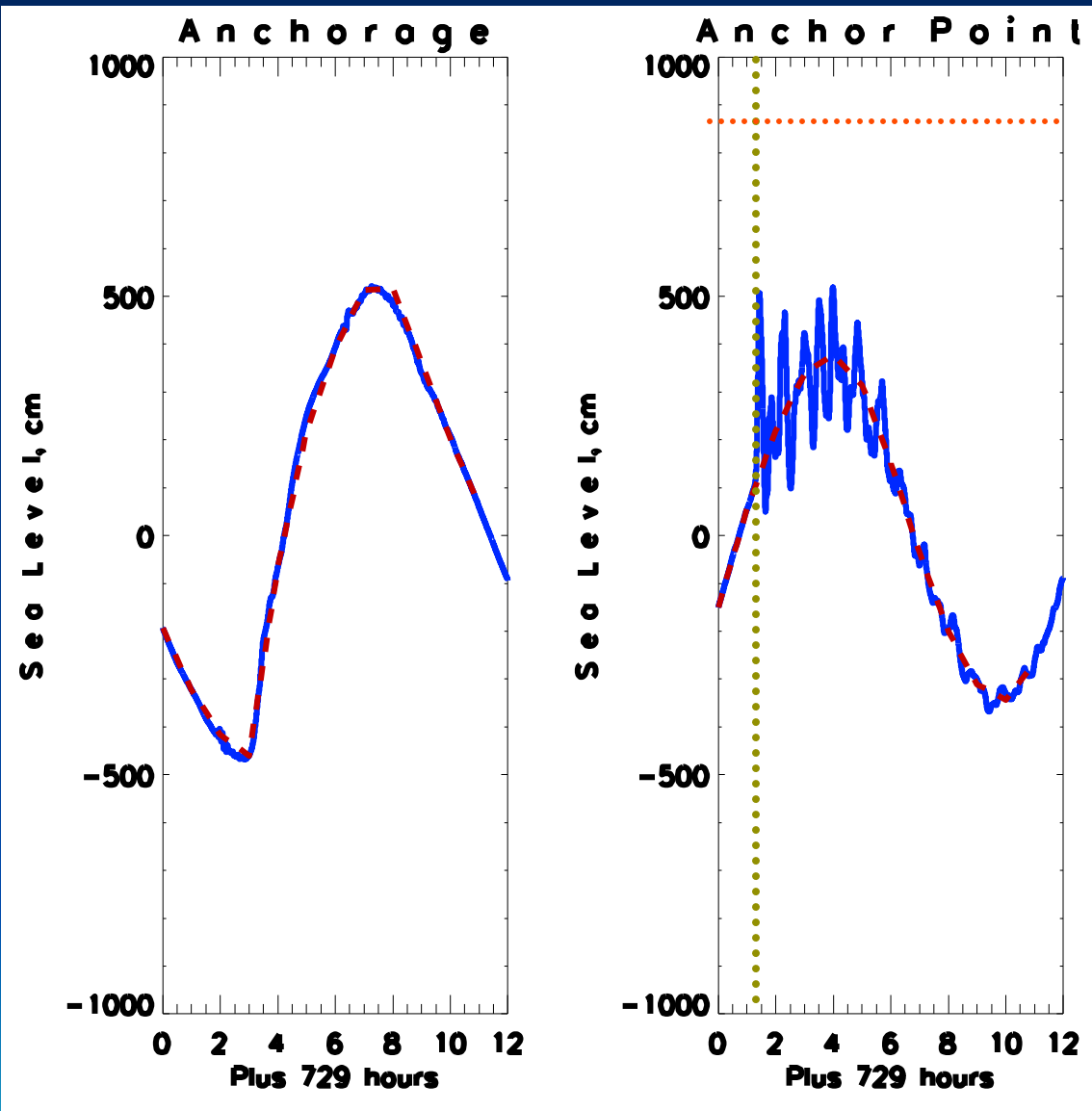




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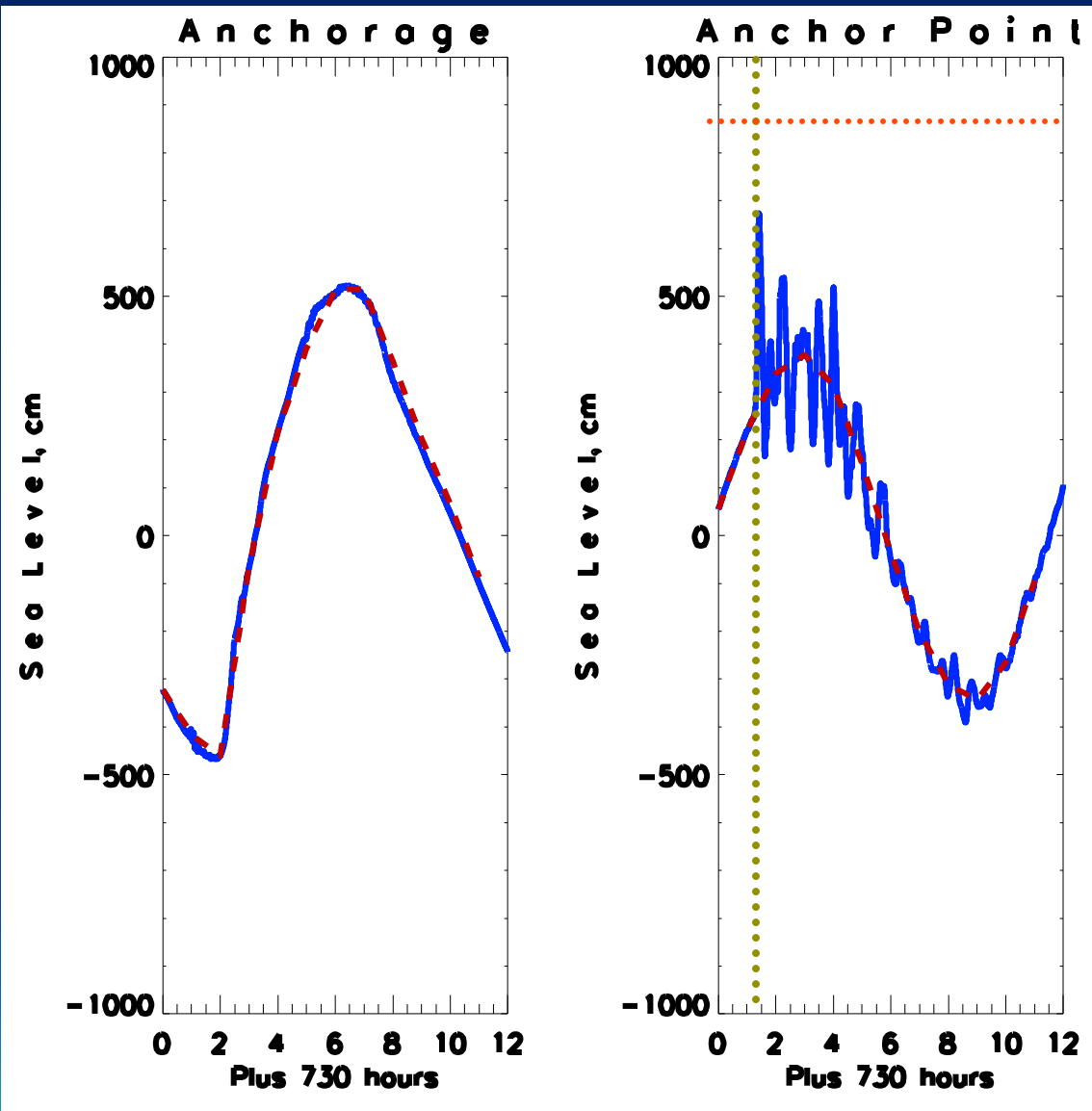
Red –
tide only

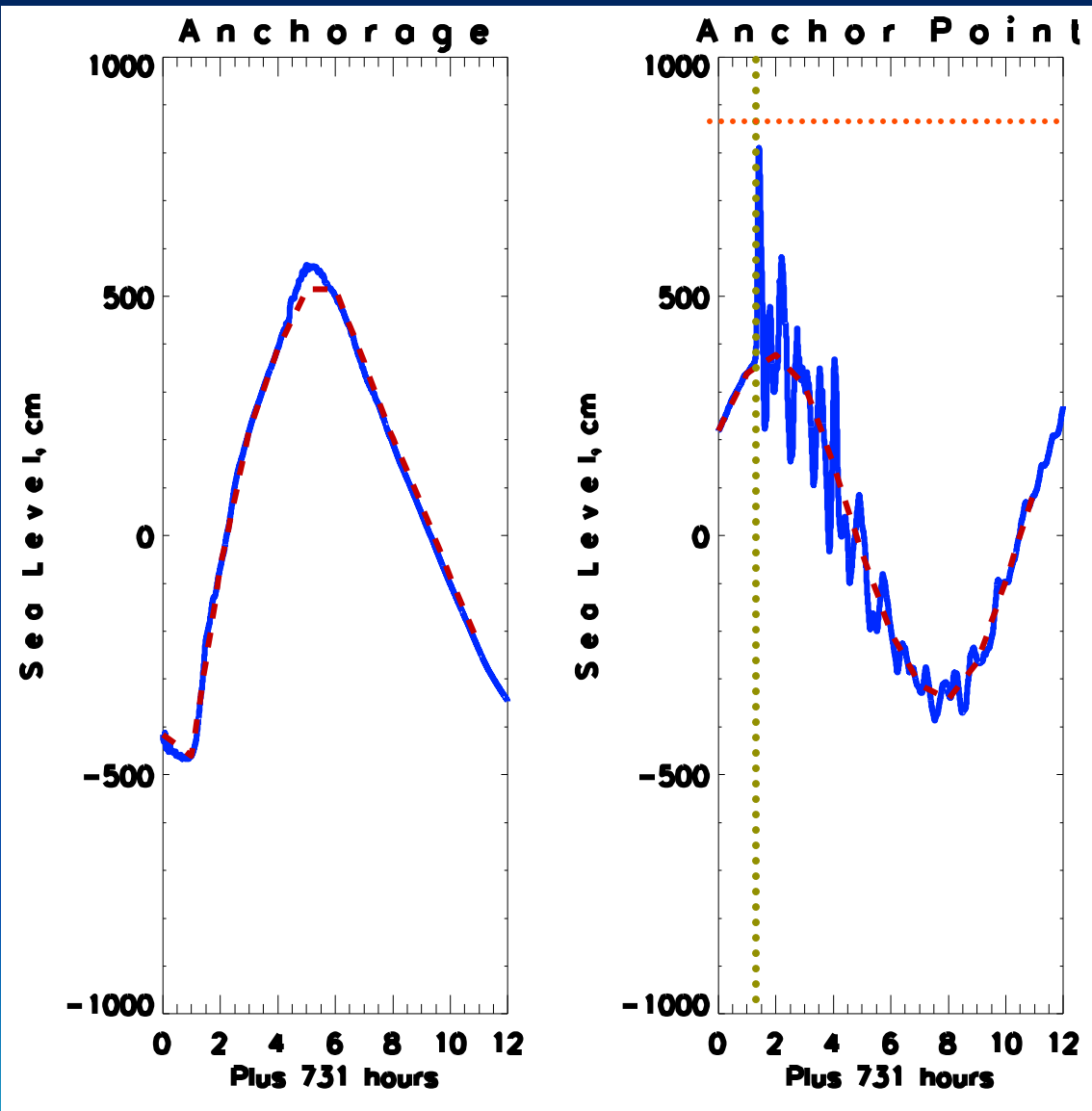




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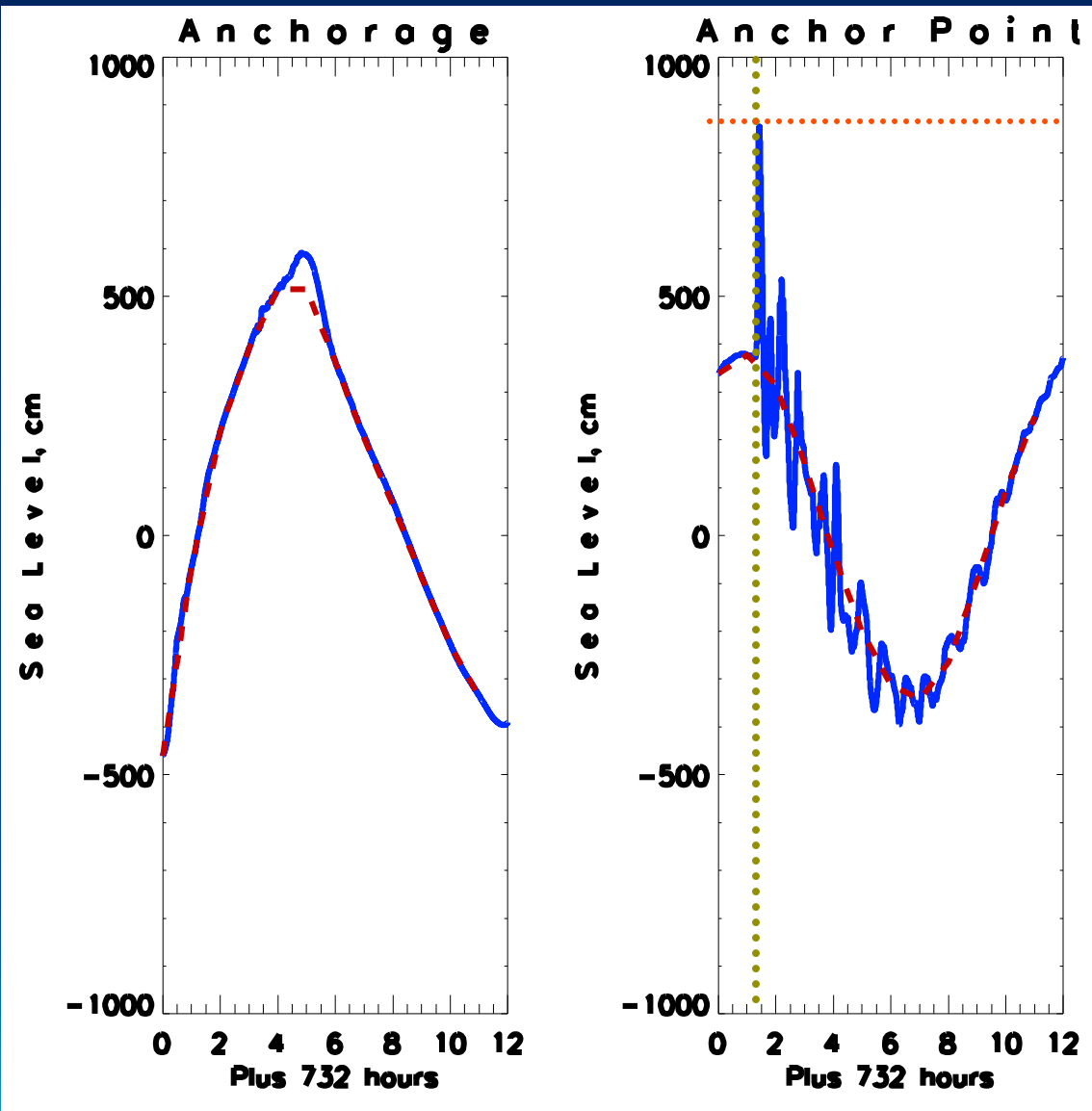


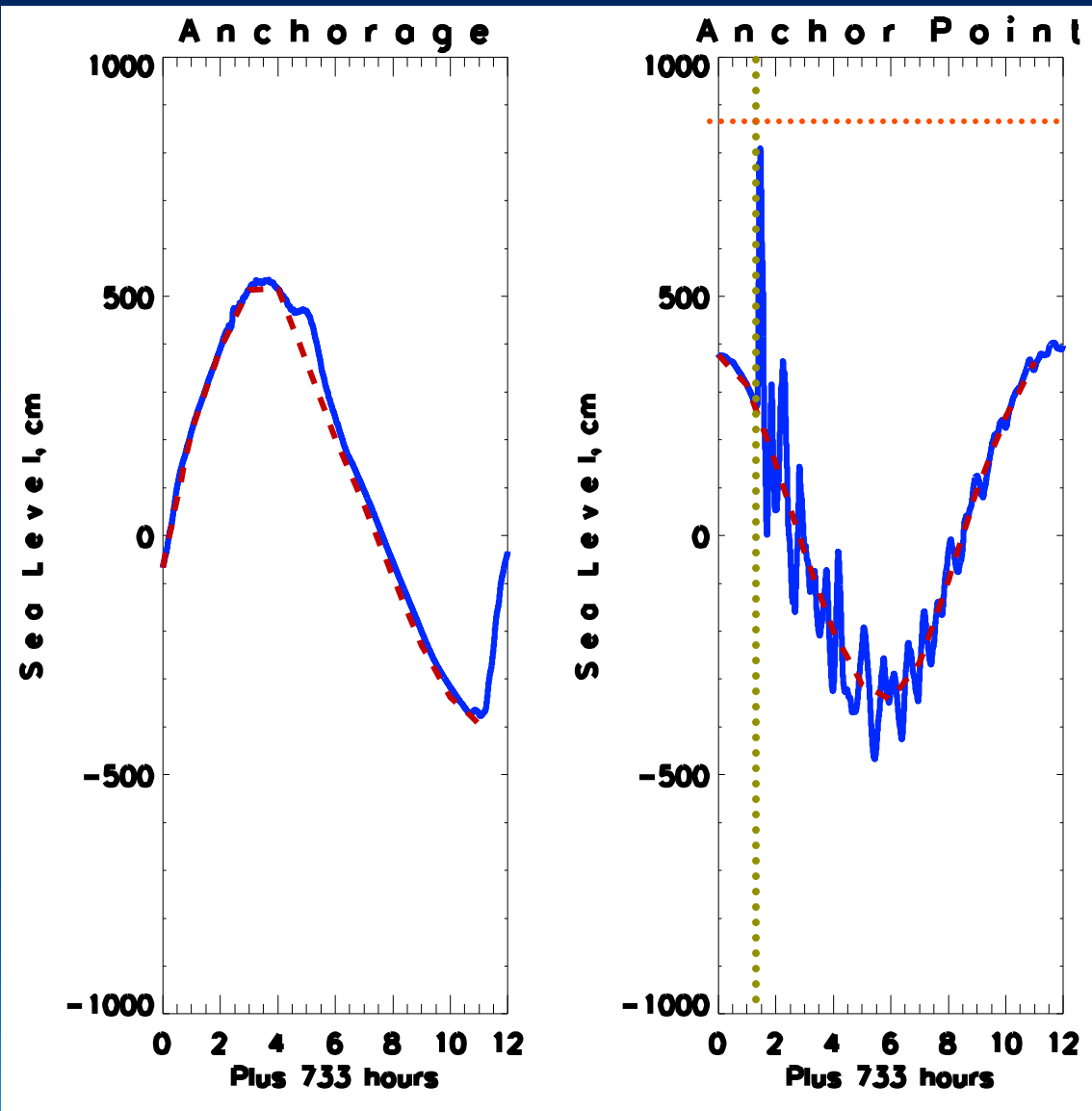


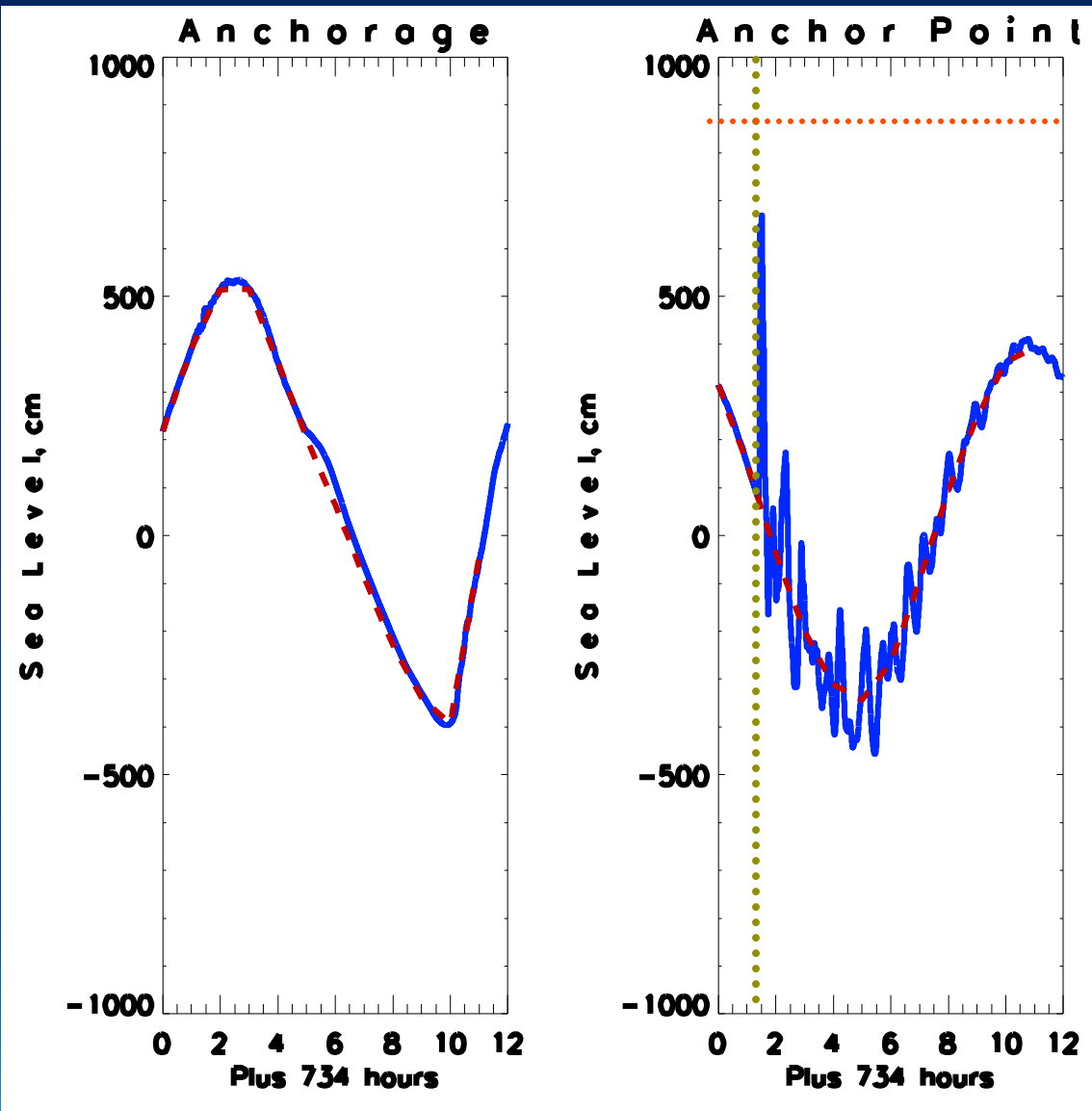
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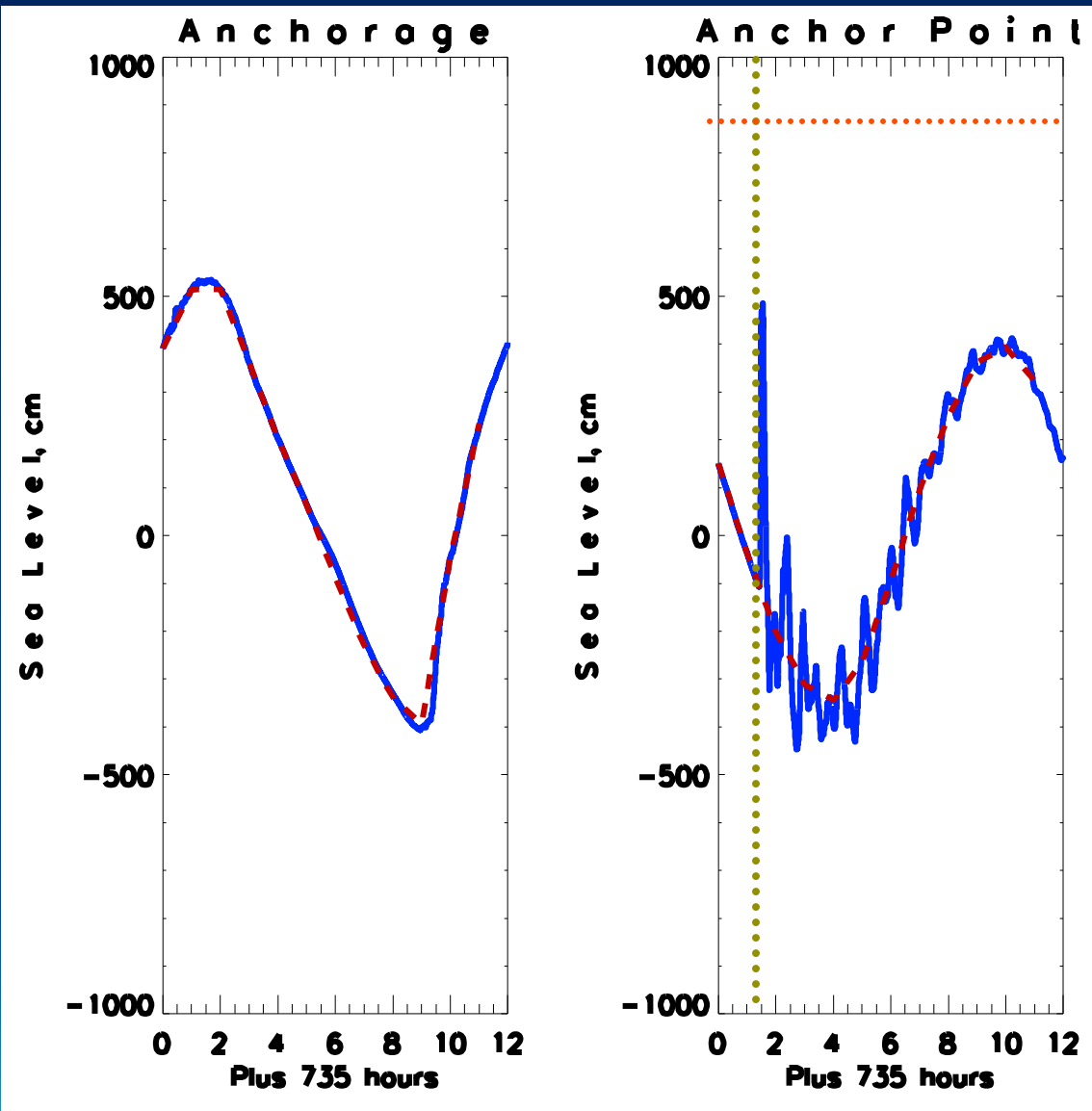






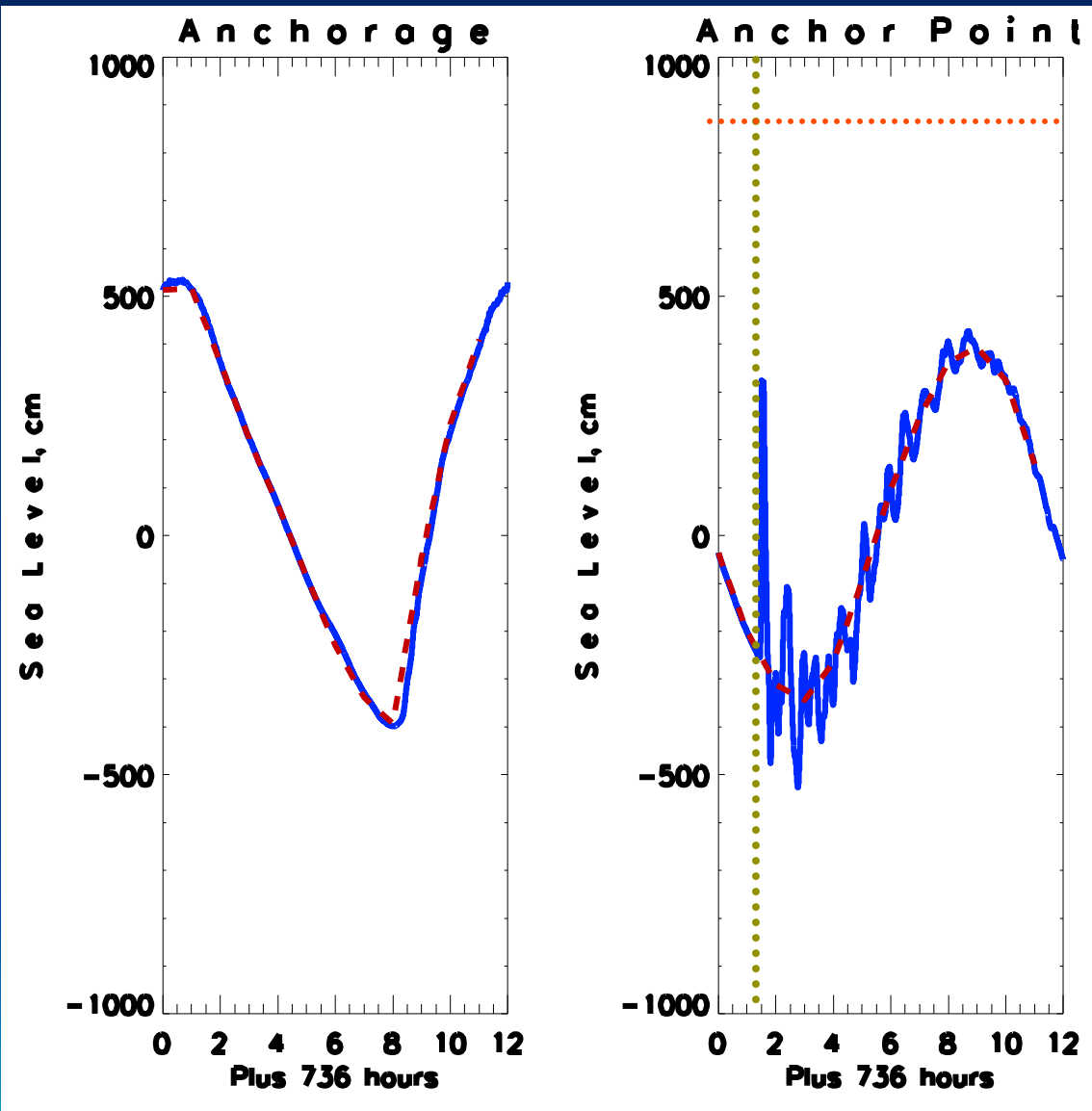
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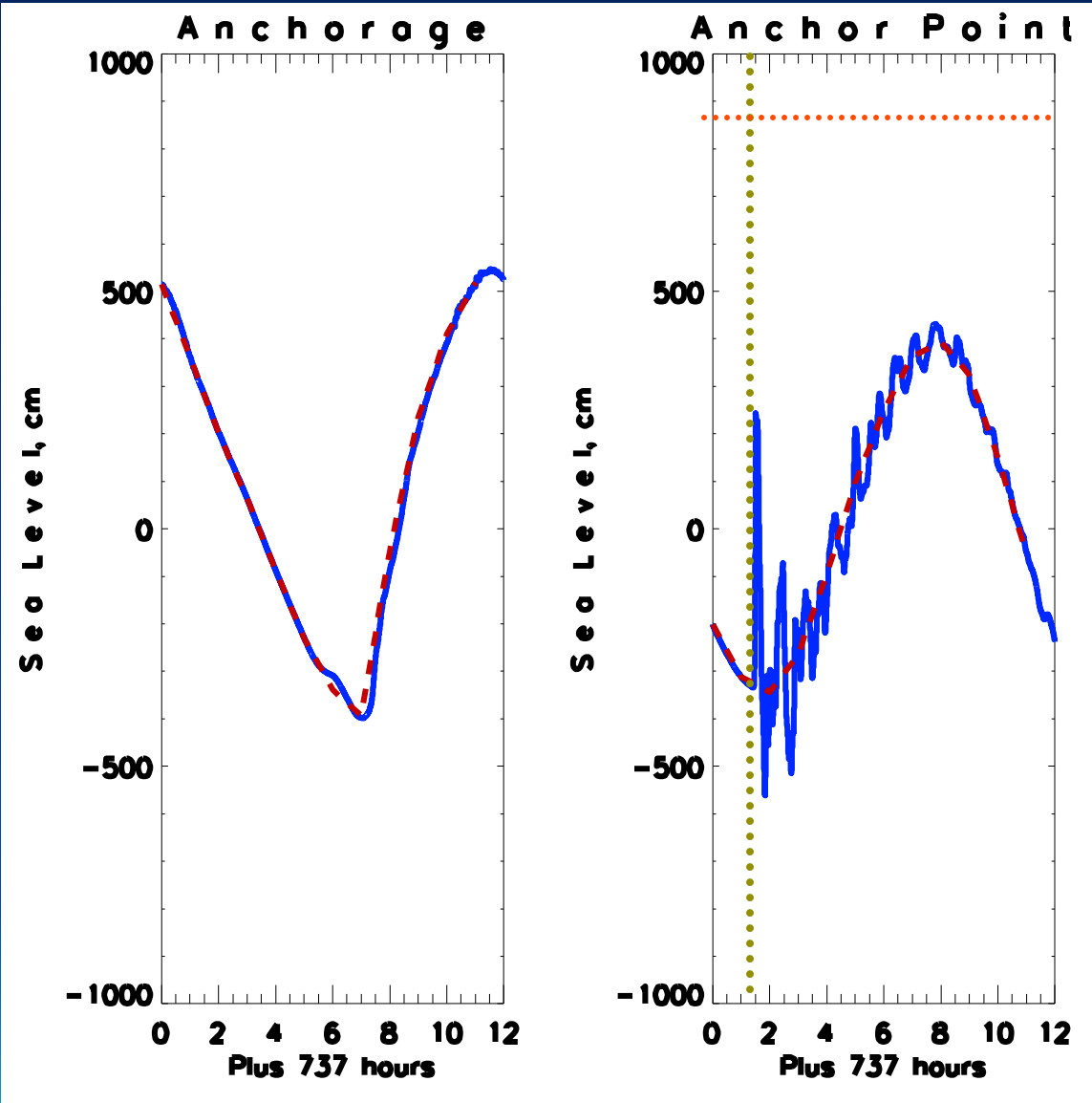
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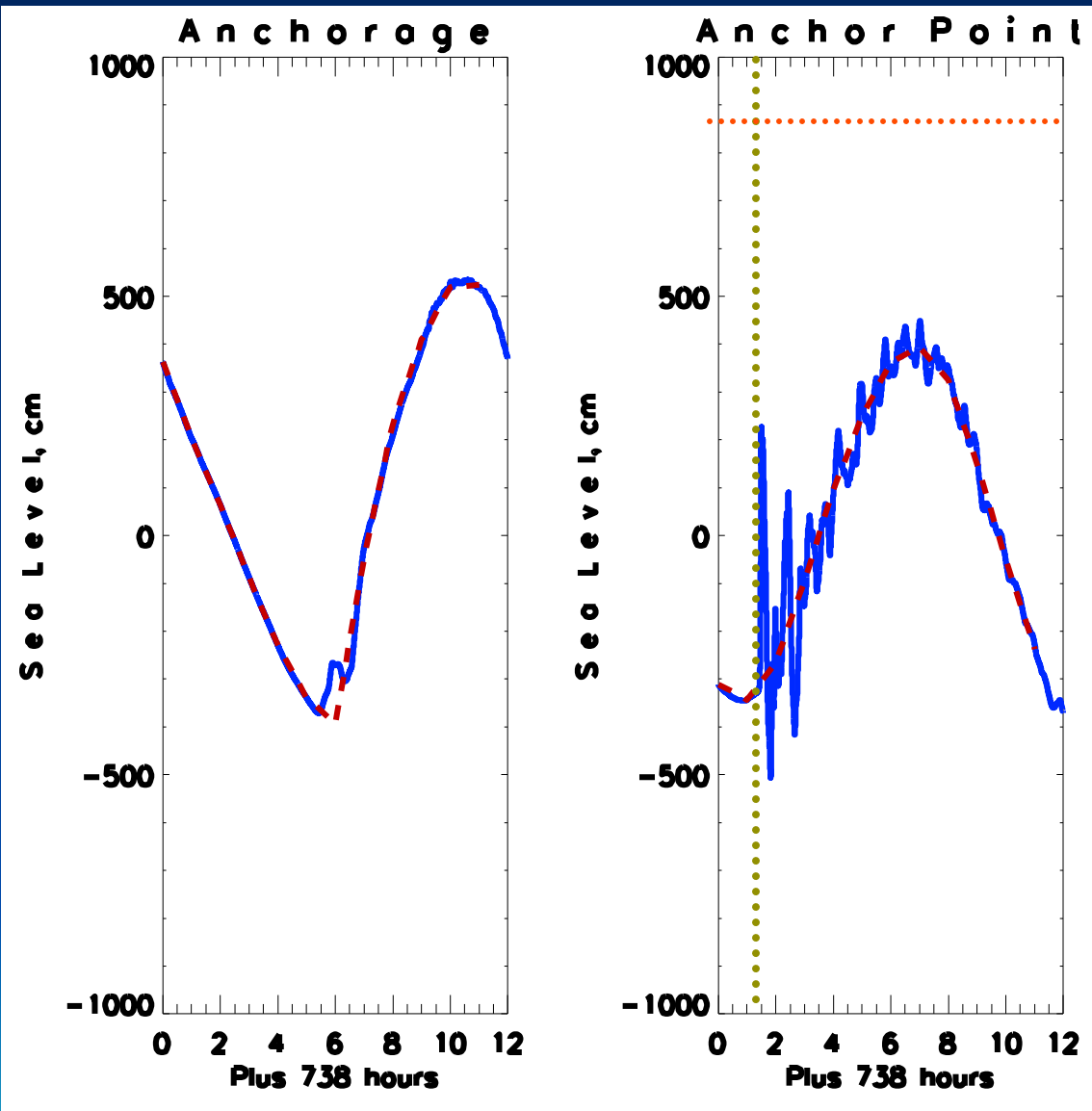




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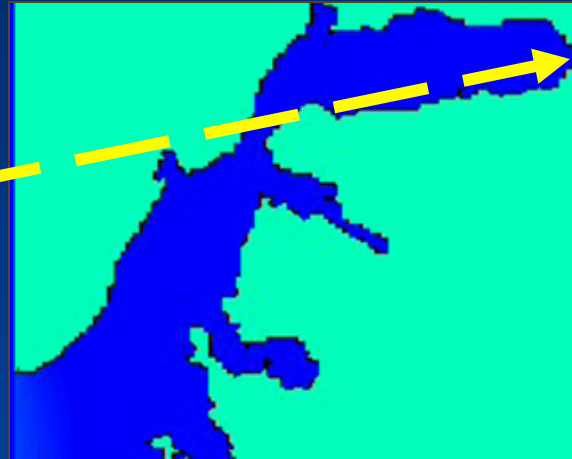
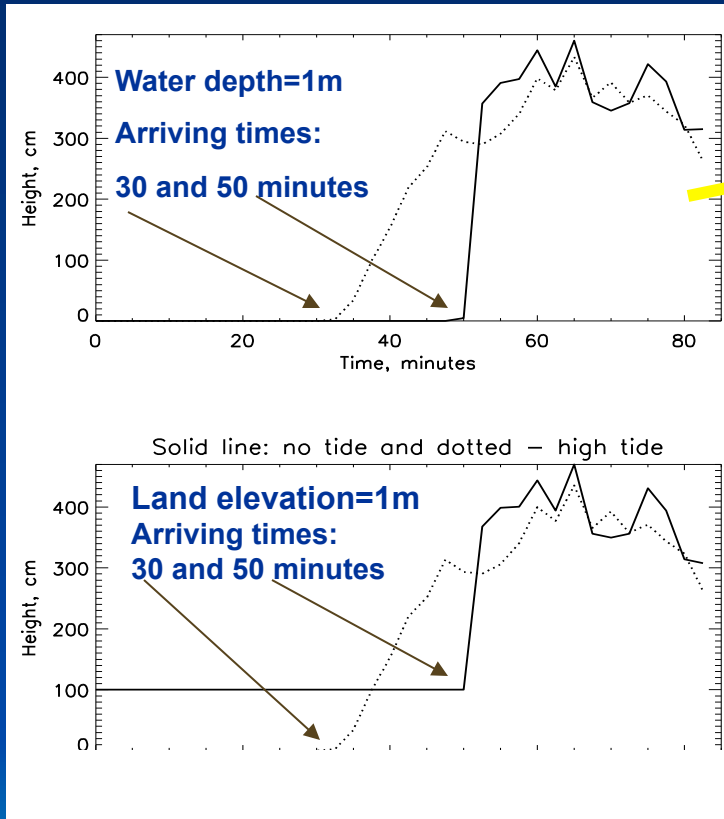
Port Valdez



Relatively deep basin:
(~100-150m)
Total length: ~130 km

Open boundary: SSH growth during 15 minutes from 0 to 200 cm

Tide-tsunami interaction (a river mouth in Port Valdez)



1. Tsunami signal arriving time without tide: 20 minutes and 50 minutes at high tide because of total depth increase and, respectively, increase of tsunami wave propagation speed.

2. Without tide sea level increases sharply and the first maximum is ~400 cm. With tide sea level grows gradually and the first maximum is ~310cm. The third maximum is the greatest one (~470cm) and is higher for the case without tide by 15 cm only.

2. Tsunami amplification for 3 maximums (first, second and third, respectively:

a) Without tide	=	2.00	2.20	2.35
b) With tide	=	1.55	1.95	2.25