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Interactive comment on “Technical Note: Remote sensing of sea surface salinity using the propagation of low-frequency navigation signals” by I. Astin and Y. Feng

Anonymous Referee #2

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The paper introduces a new use of Loran, akin to use of GPS to measure ionospheric electron content. The analysis is clearly presented and straight-forward. Empirical data is presented to validate hypothesis that Loran can be used to sense sea surface salinity. Additional details and clarification is needed.

Scientific comments: P 2973: As mentioned by Johnson, the 24 hour filtering should be described in more detail. One goal of the filtering would be to average down to temporally varying contribution to delay that are not salinity related. As the salinity contribution on the order of 10's of nanoseconds, an account for all potential measurement errors should be made (transmission time error, TOA measurement error due to noise, skywave, etc.). Similar filtering should be performed to the data used to derive SST

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and PF delay to have a fair comparison. P2974: Reference where you get the 1 K increase in SST causing a 1 ns/100 km decrease in Loran delay. I noticed this is roughly on the same order in the temperature relationship of the PF term. Is it possible that the SST variation is already accounted for? Please detail how the SSS is calculated. I assume it is an integrated sum along. Also, is the sea salinity data averaged and if so how does the averaging affect the analysis.

Technical Comments: P2974: The definition of PF shown is fine. It should be made clear that this PF is actually the full propagation time for the Loran signal along an all air path rather than a delay from the “ideal” speed of light propagation time. P2974/Figure 3: Please spell out the acronym PSS either in the text or the figure (in Figure 3).

Interactive comment on Ocean Sci. Discuss., 11, 2971, 2014.

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