



Tidal Phase Correction for Two Stations in Alaska

*SCN Supporting Documents
August 2021*

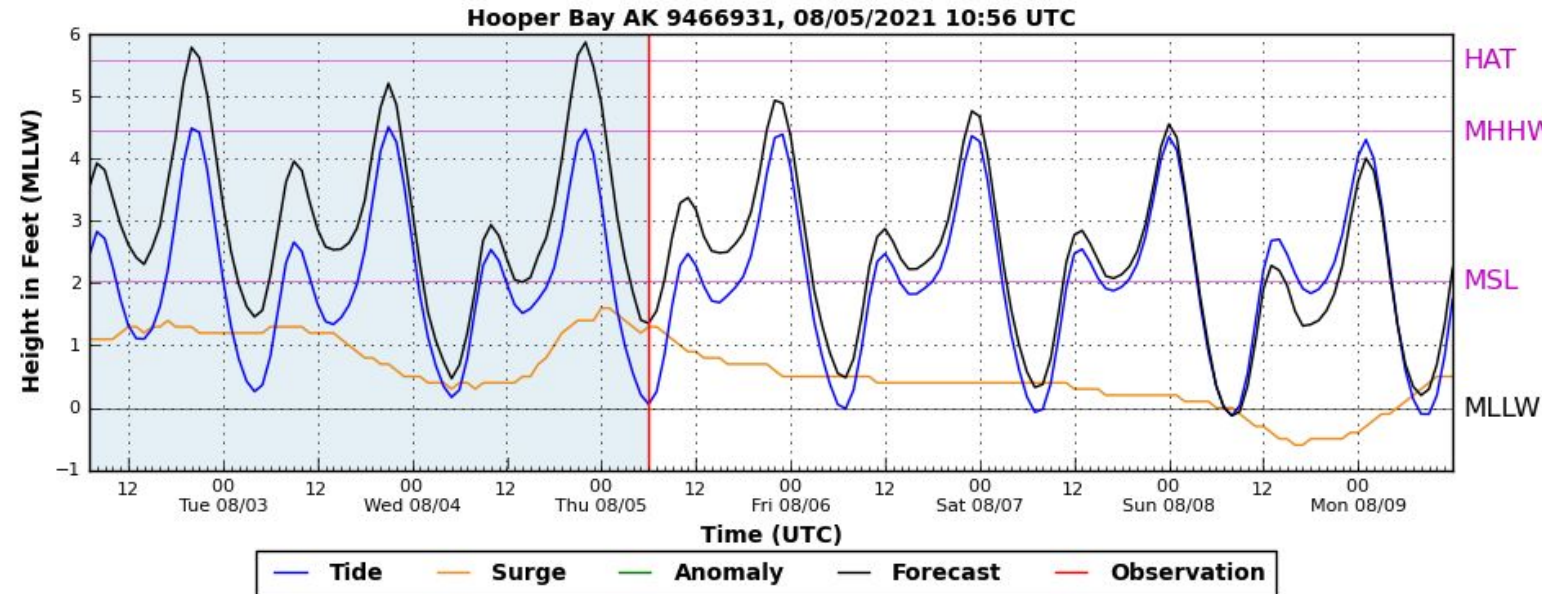
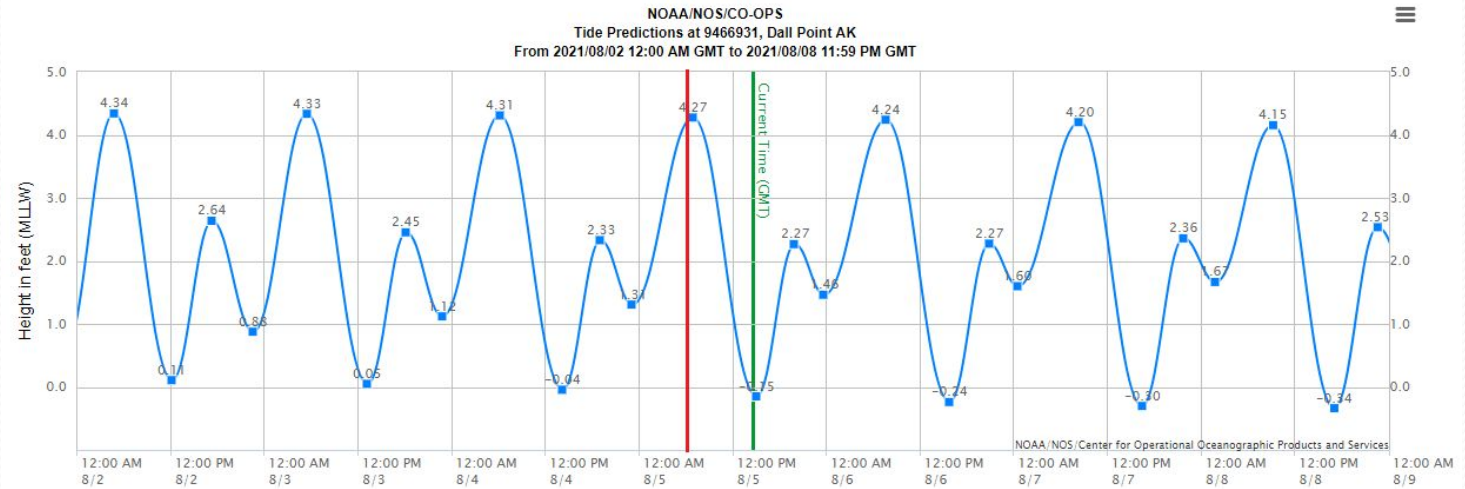
Arthur Taylor, Huiqing Liu, Judy Ghirardelli

Decision Support Division
Meteorological Development Laboratory
National Weather Service

Problem: Station Tide for Hooper Bay, AK Has Wrong Timezone in ETSS and P-ETSS

- Top - from NOS
- Bottom - from ETSS
- Red line is same time

Blue tide curves match if bottom curve is shifted 8-hrs to the right

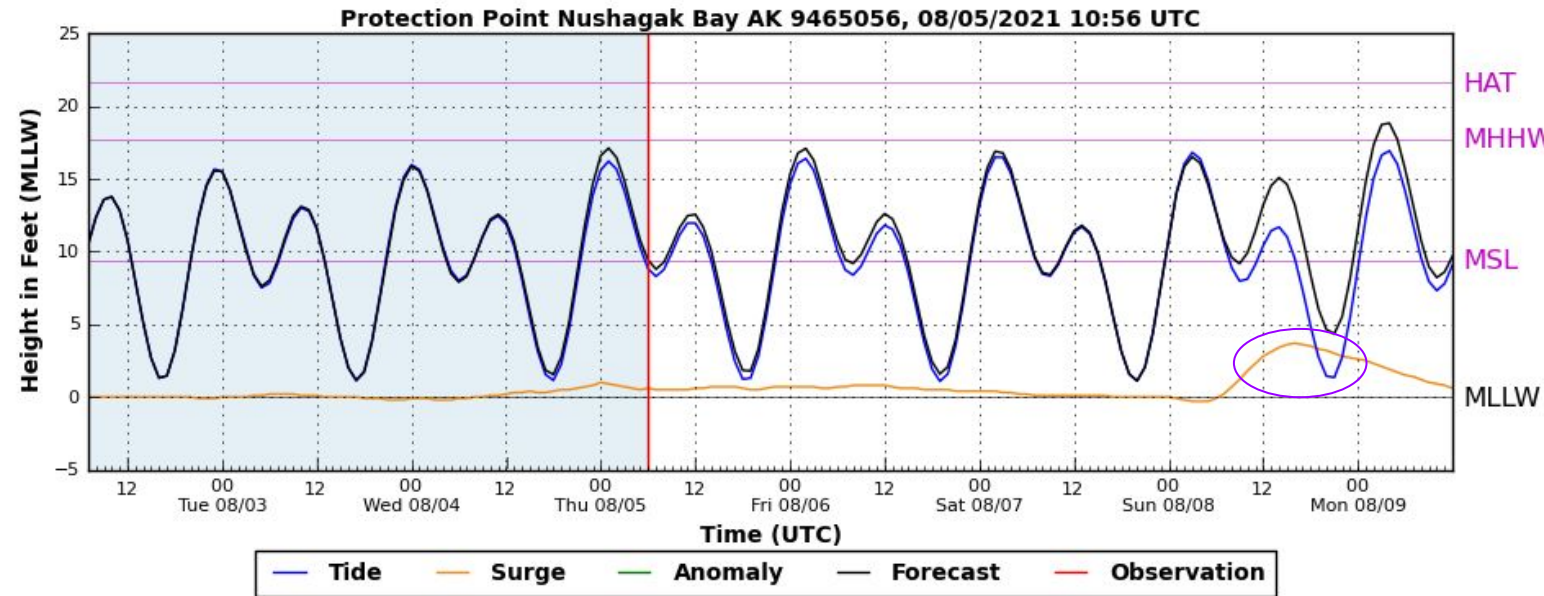
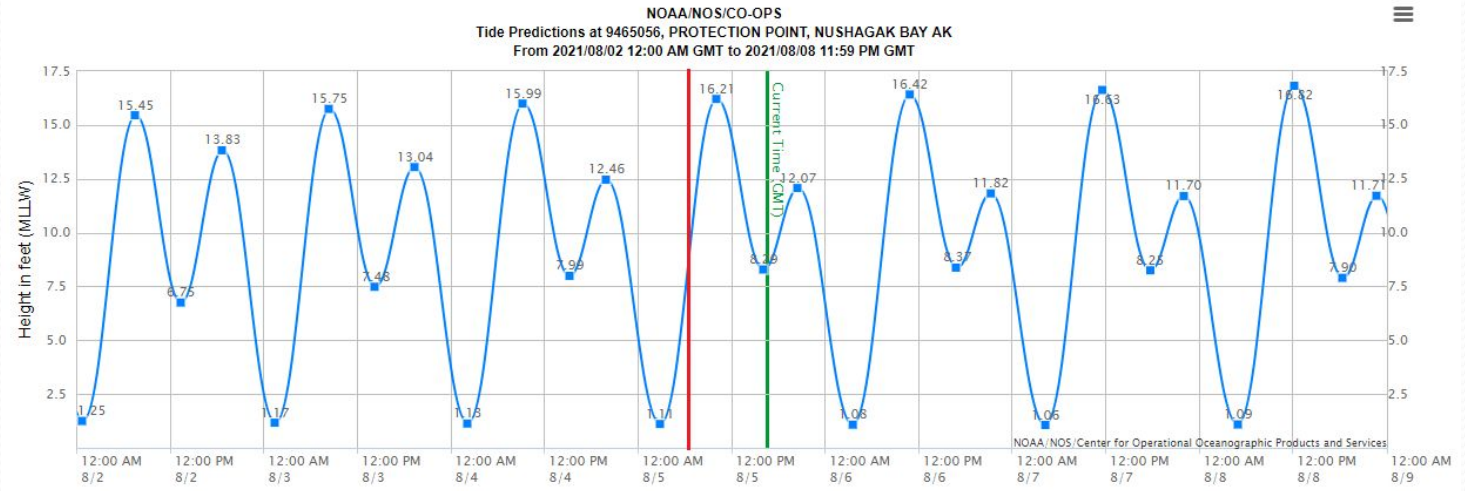


Problem: Station Tide for Protection Point, AK Has Wrong Timezone in ETSS and P-ETSS

- Top - from NOS
- Bottom - from ETSS
- Red line is same time

Blue tide curves match if bottom curve is shifted 8-hrs to the right

Purple is upcoming event (at lower-low tide)



Explanation

A tide prediction at a station is the sum of several (typically 37) tidal constituents, each of which represents a specific influence impacting tidal changes.

- For example - primary constituents include the Earth's rotation, the position of the Moon and Sun relative to the Earth, the Moon's altitude (elevation) above the Earth's Equator, and bathymetry

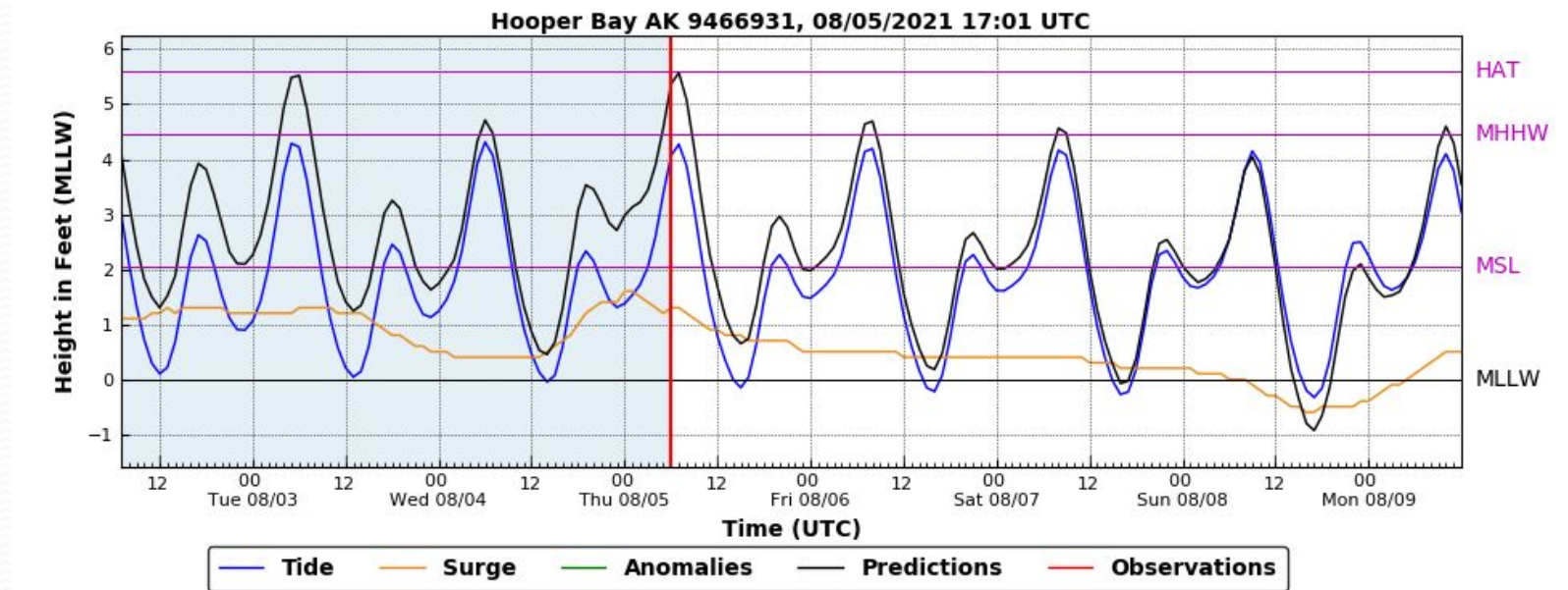
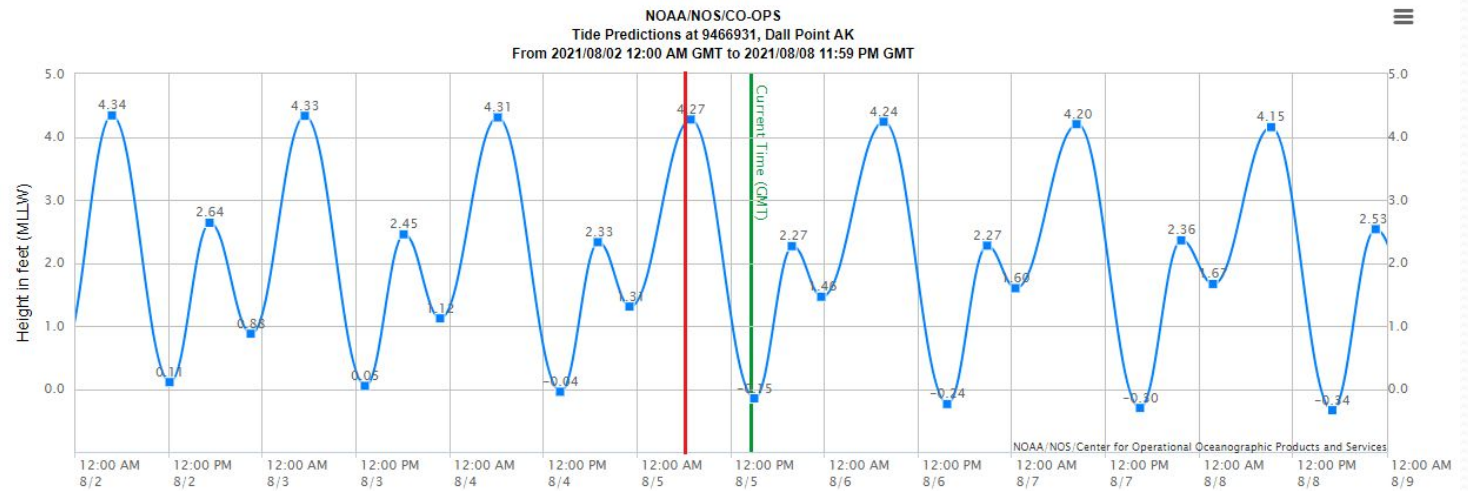
Each constituent is represented by a sinusoidal curve with a specific amplitude and phase shift. The phase shift has a time associated with it, which NOS provides in either local time or UTC.

Unfortunately, the phase shifts for these two stations were in local time instead of the expected UTC, thus there is an 8-hr shift (the difference between these stations local time and UTC).

Correction: Station Tide for Hooper Bay, AK

- Top - from NOS
- Bottom - from ETSS
- Red line is same time

Blue tide curves match



Correction: Station Tide for Protection Point, AK

- Top - from NOS
- Bottom - from ETSS
- Red line is same time

Blue tide curves match

Purple is upcoming event (at higher-high tide)

