

## TWLWG4 Status Report: Task H1

One action item from our TWLWG3 meeting last year was Task H1: Compare the tidal predictions generated as a result of analysis of a common data set using different analysis software.

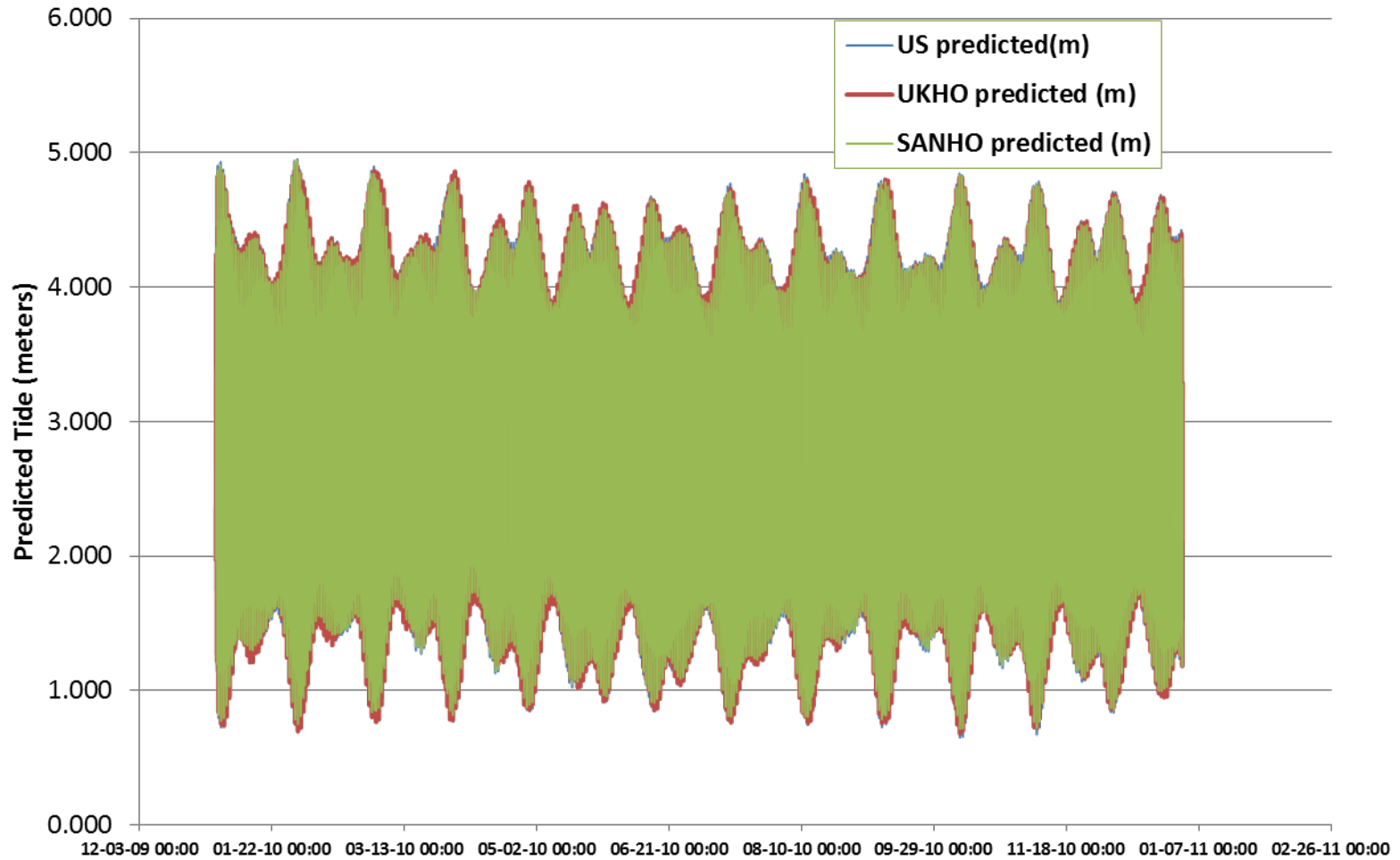
- Observations, harmonic constants, and hourly tide predictions were exchanged for US tide station at Boston – Calendar Year 2010
- US performed harmonic analysis and predicted tides using 120 constituents
- UKHO performed harmonic analysis and predicted tides using 86 constituents
- SANHO performed harmonic analysis and predicted tides using 51 constituents
- In addition, harmonic constants, and hourly tide predictions were exchanged for SANHO station at Port Nolloth – Calendar Year 2010 and SANHO and US results are compared.

# Comparison of Harmonic Constants for Boston – 2010

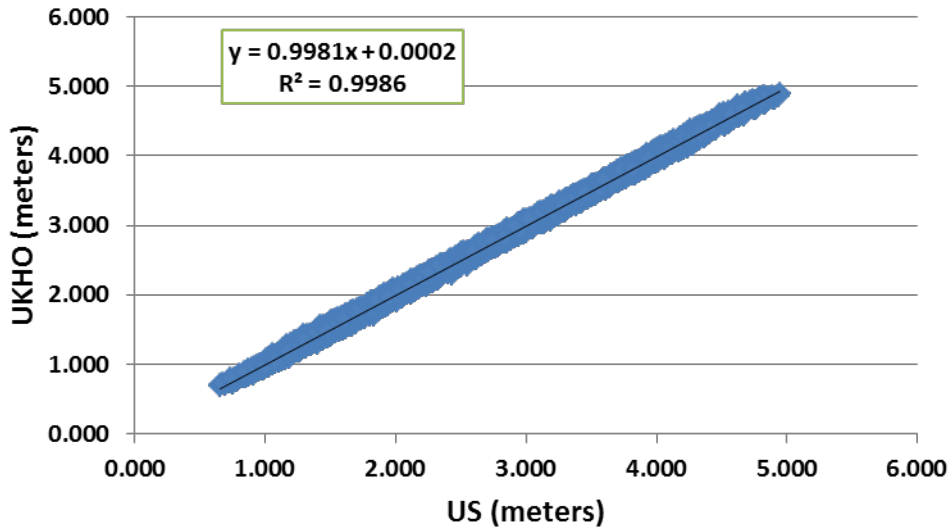
BOSTON, US: One-Year Harmonic Analysis Results for 2010

CONSTITUENT	AMPLITUDE (meters)			PHASE (degrees)		
	UKHO	SANHO	US	UKHO	SANHO	US
Sa	0.033	0.033	0.033	334.2	332.4	332.3
Ssa	0.024	0.026	0.026	344.0	357.0	357.1
Msf	0.022	0.153	0.015	56.6	60.4	60.6
Q1	0.018	0.017	0.017	169.6	166.2	166.2
O1	0.113	0.114	0.114	185.5	186.6	186.6
M1	0.006	0.007	0.007	186.1	212.3	212.4
P1	0.044	0.429	0.043	199.4	199.7	199.8
K1	0.140	0.140	0.140	204.4	203.8	203.8
J1	0.008	0.009	0.009	216.0	216.5	216.8
2N2	0.034	0.035	0.035	65.7	64.9	64.8
mu2	0.010	0.008	0.008	99.5	68.8	69.4
N2	0.328	0.326	0.326	76.1	77.5	77.5
nu2	0.068	0.067	0.067	89.9	88.2	88.2
OP2	0.009	0.009	0.009	142.1	149.0	149.6
M2	1.385	1.386	1.387	109.2	109.2	109.2
L2	0.082	0.087	0.087	153.5	162.9	162.9
T2	0.020	0.020	0.020	130.2	129.8	129.6
S2	0.209	0.210	0.210	146.5	146.2	146.2
R2	0.005	0.005	0.005	30.4	28.7	27.8
K2	0.059	0.059	0.059	148.4	147.3	147.3
MN4	0.013	0.013	0.013	9.3	8.9	10.2
M4	0.023	0.024	0.024	27.5	27.0	26.7
MS4	0.009	0.009	0.009	63.3	61.7	62.0
2MS6	0.011	0.011	0.011	330.9	329.9	330.0

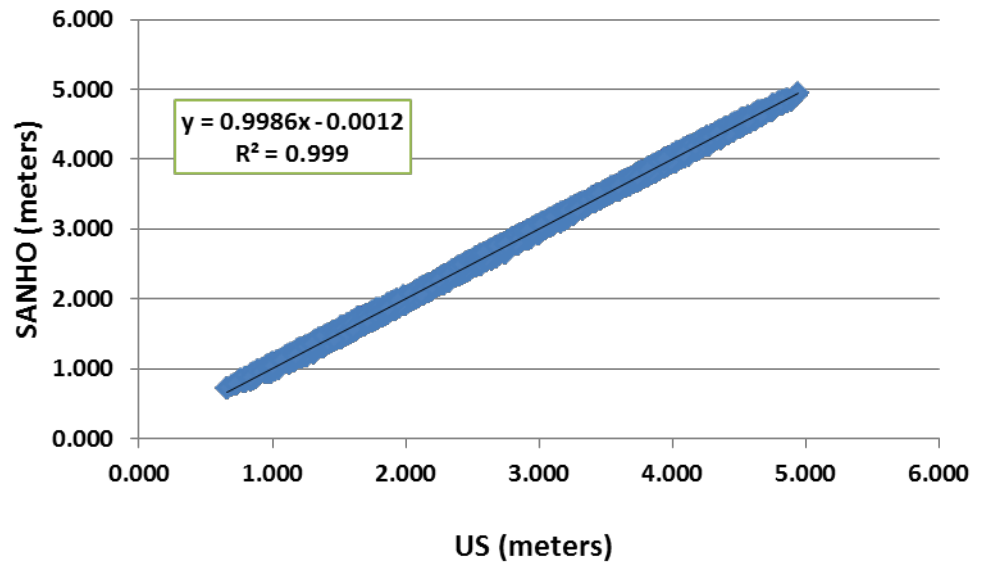
## Comparison of Predicted Tides for Boston - 2010



### Comparison of US and UKHO Predicted Hourly Heights for Boston - 2010



### Comparison of US and SANHO Predicted Hourly Heights for Boston - 2010

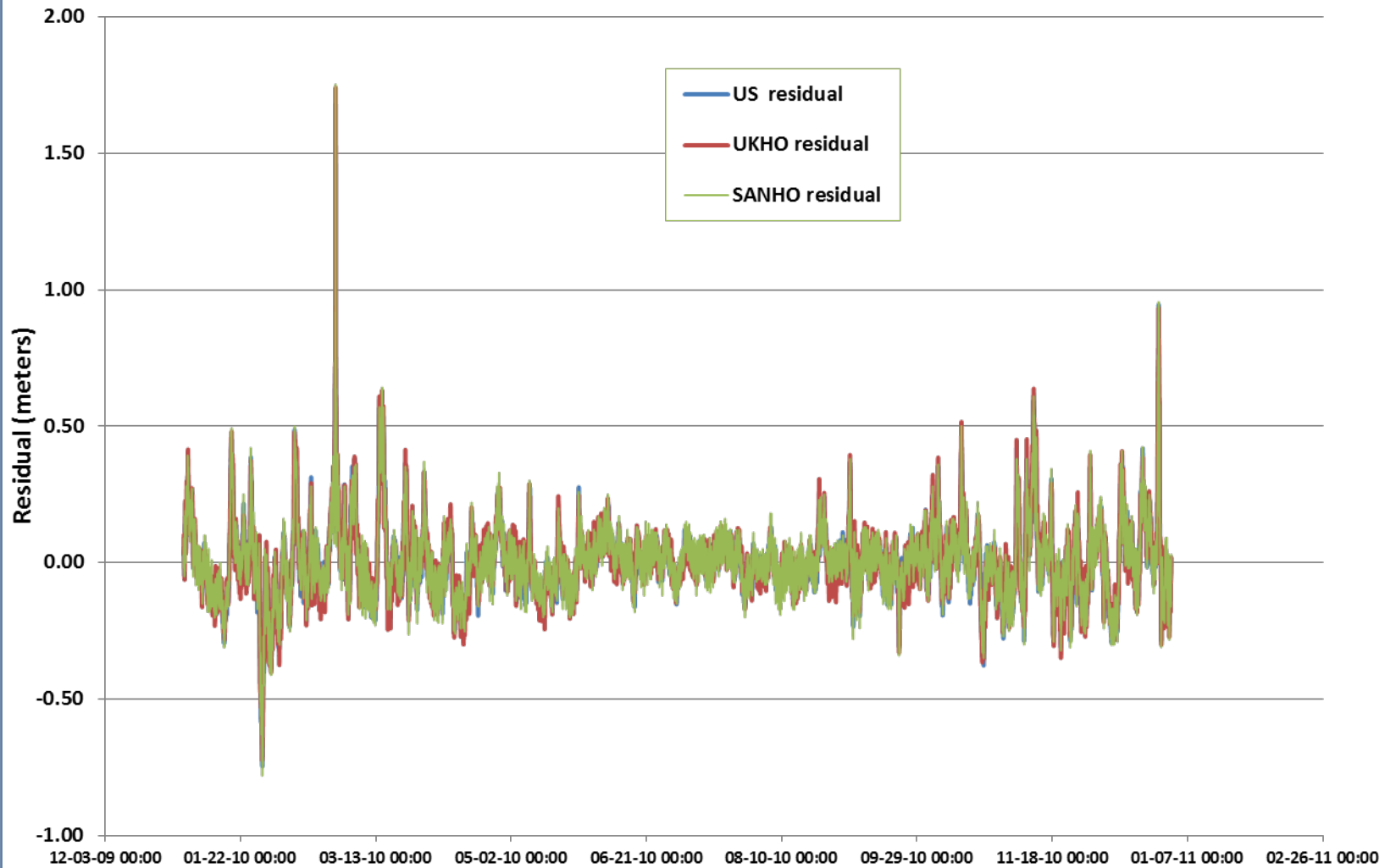


# Comparison of Hourly Predicted Tides for Boston – 2010

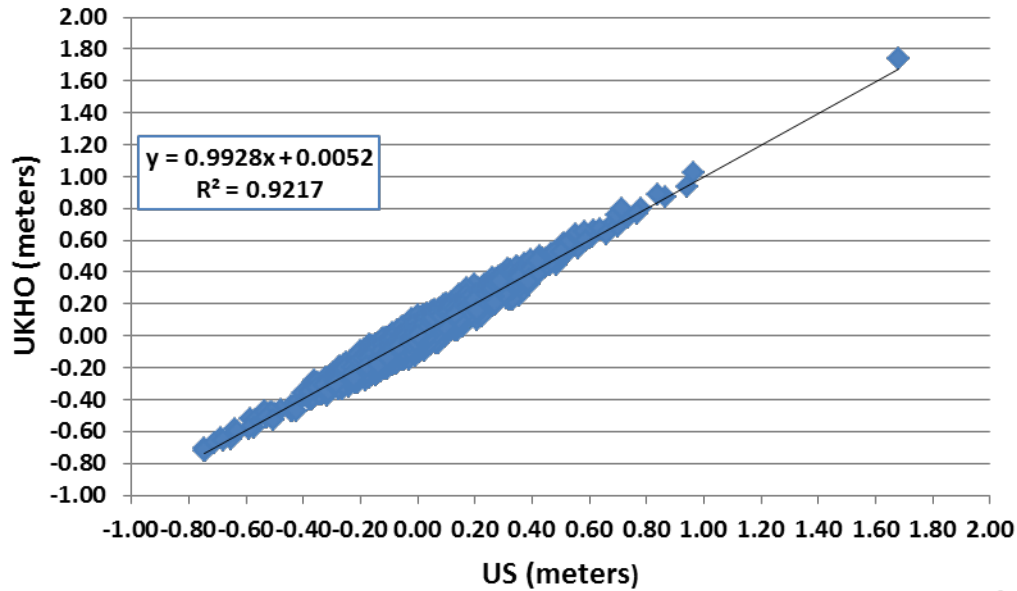
<b>Q-C statistic</b>	<b>US-UKHO</b>	<b>US-SANHO</b>
<b>Average Difference</b>	<b>0.005</b>	<b>0.005</b>
<b>Standard Deviation</b>	<b>0.038</b>	<b>0.032</b>
<b>Max difference</b>	<b>0.131</b>	<b>0.103</b>
<b>Min difference</b>	<b>-0.121</b>	<b>-0.083</b>

Units in meters

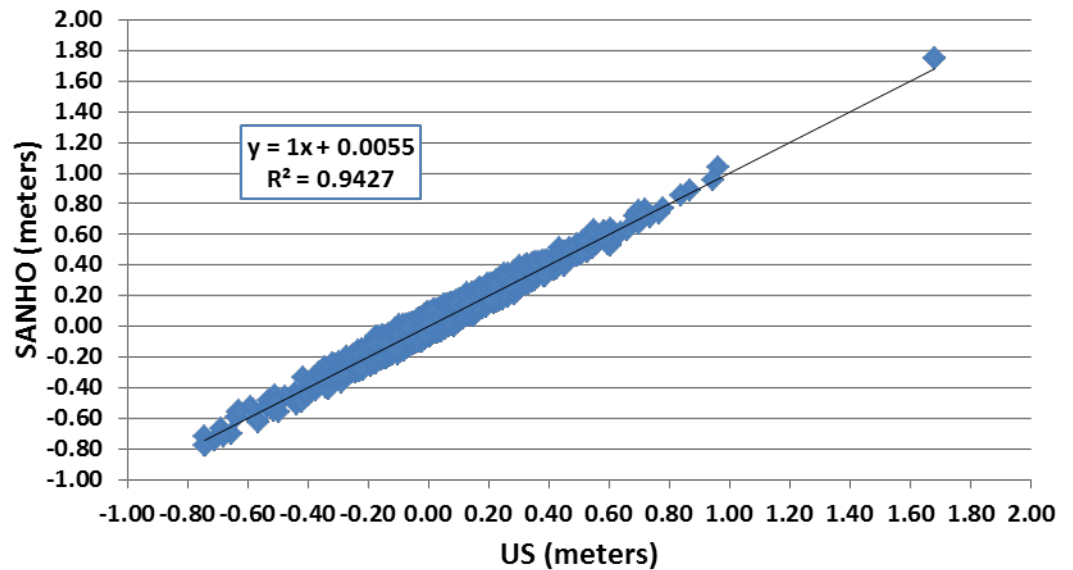
# Comparison of Observed minus Predicted Hourly Residuals for Boston - 2010



Comparison of Observed minus Predicted Residuals:  
US and UKHO for Boston Hourly Heights - 2010



Comparison of Observed minus Predicted Residuals  
for US and SANHO for Boston Hourly Heights - 2010



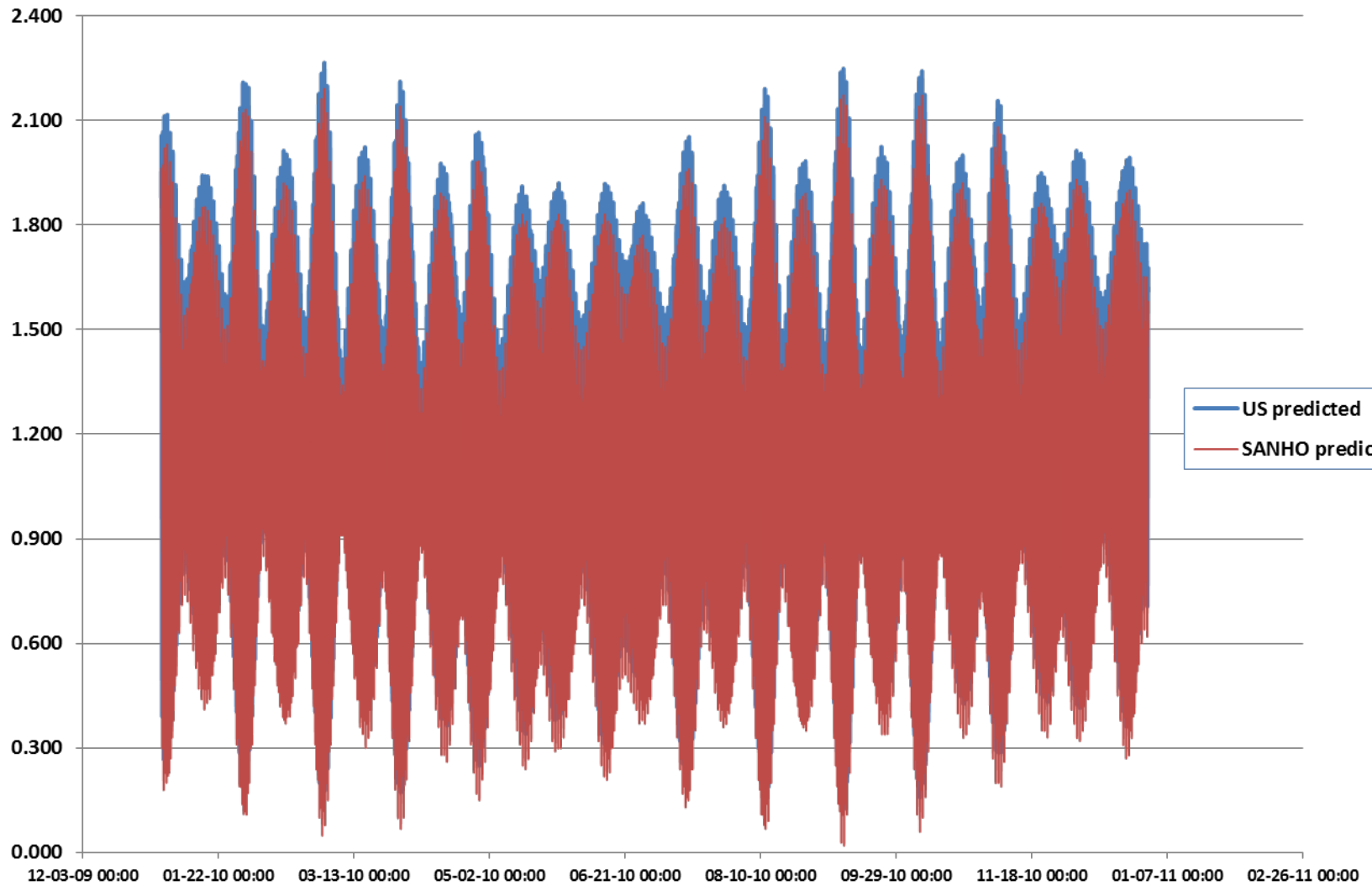
# Comparison of Observed minus Predicted Tide Hourly Residuals for Boston - 2010

<b>Q-C statistic</b>	<b>US</b>	<b>UKHO</b>	<b>SANHO</b>
<b>Average Difference</b>	<b>0.000</b>	<b>0.005</b>	<b>0.005</b>
<b>Standard Deviation</b>	<b>0.129</b>	<b>0.134</b>	<b>0.133</b>
<b>Max difference</b>	<b>1.679</b>	<b>1.739</b>	<b>1.750</b>
<b>Min difference</b>	<b>-0.746</b>	<b>-0.723</b>	<b>-0.780</b>

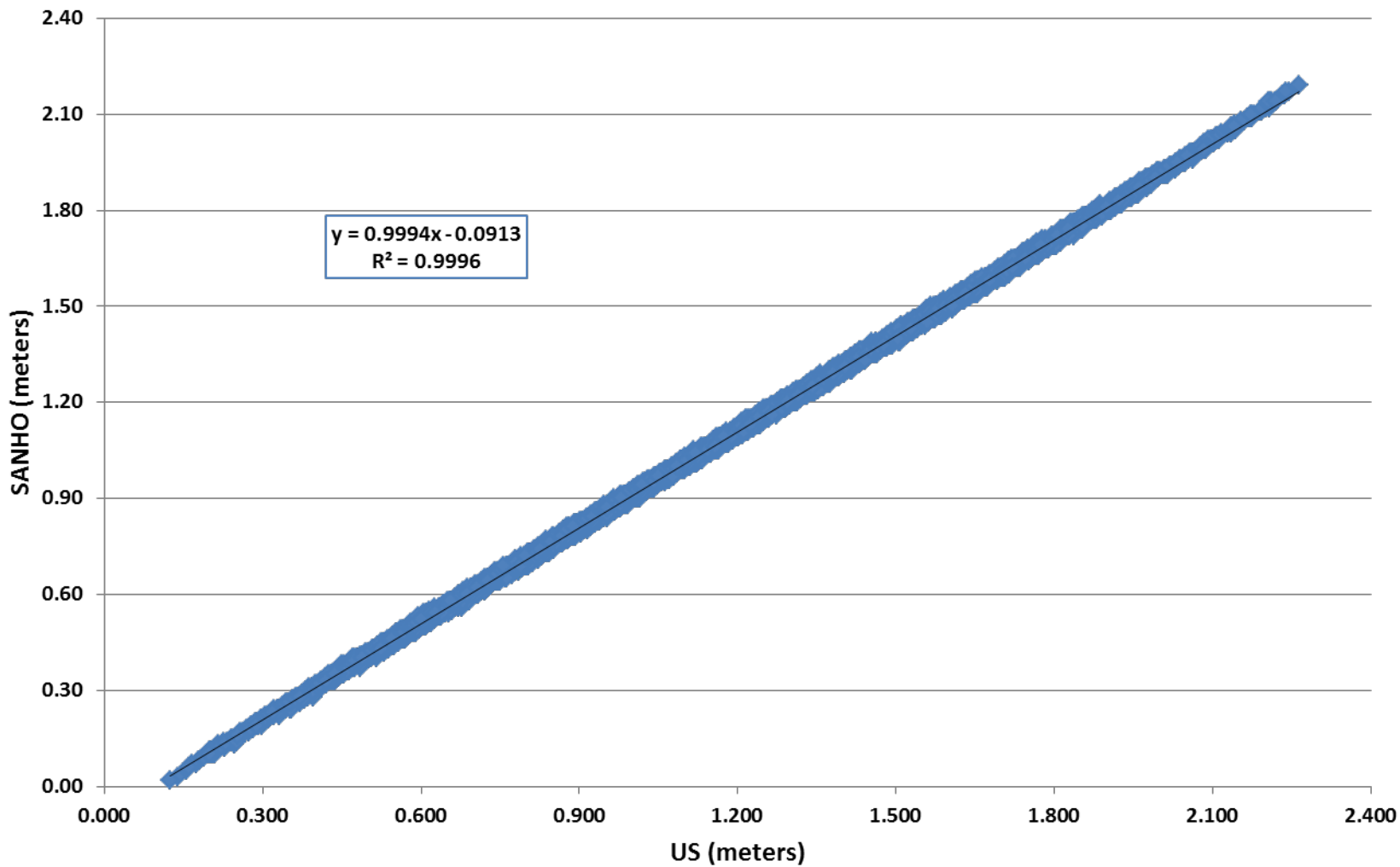
Units in meters)



# Comparison of Predicted Hourly Heights for Port Nolloth - 2010



# Comparison of US and SANHO Predicted Tides for Port Nolloth - 2010

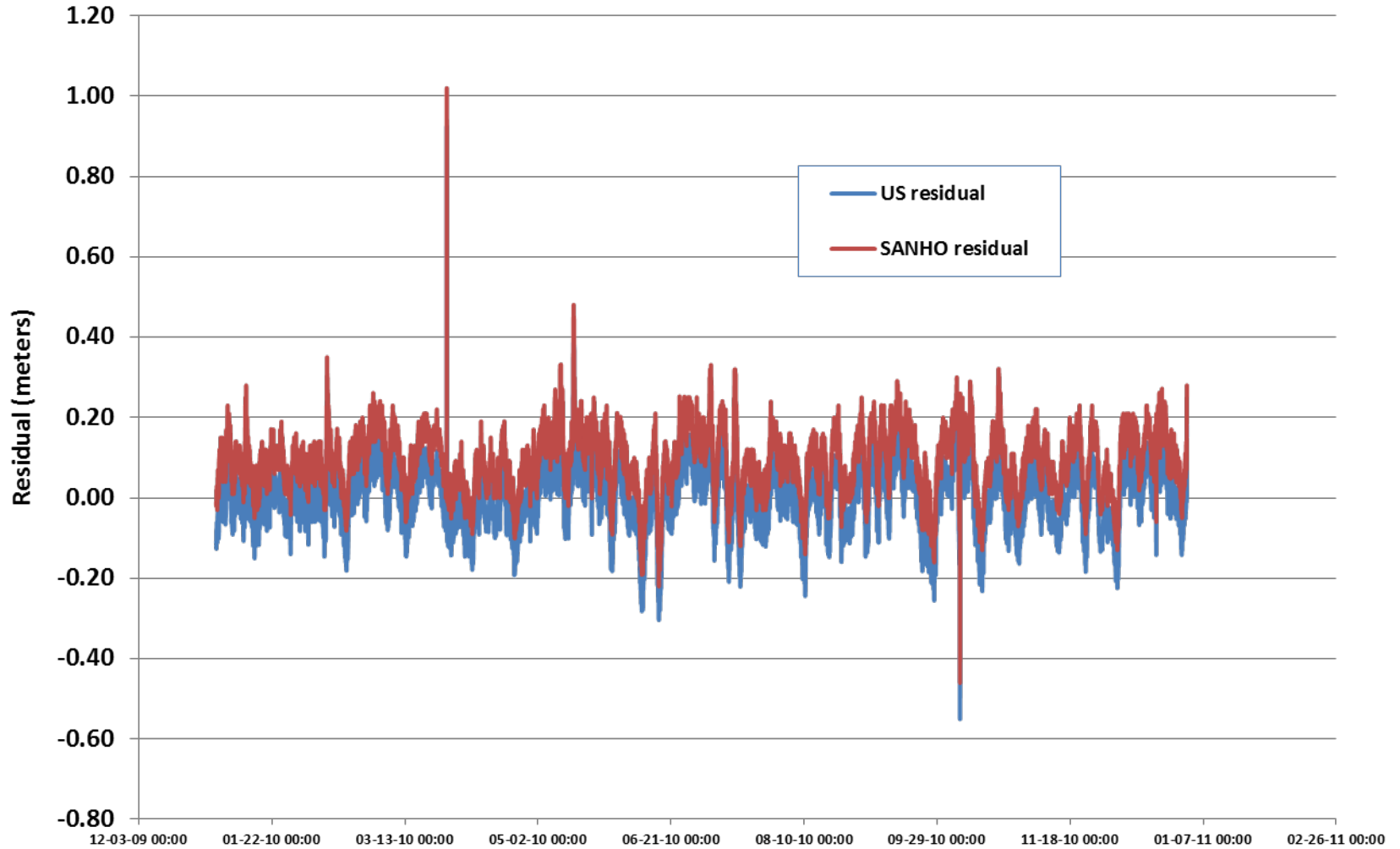


# Comparison of Hourly Predicted Tides for Port Nolloth – 2010

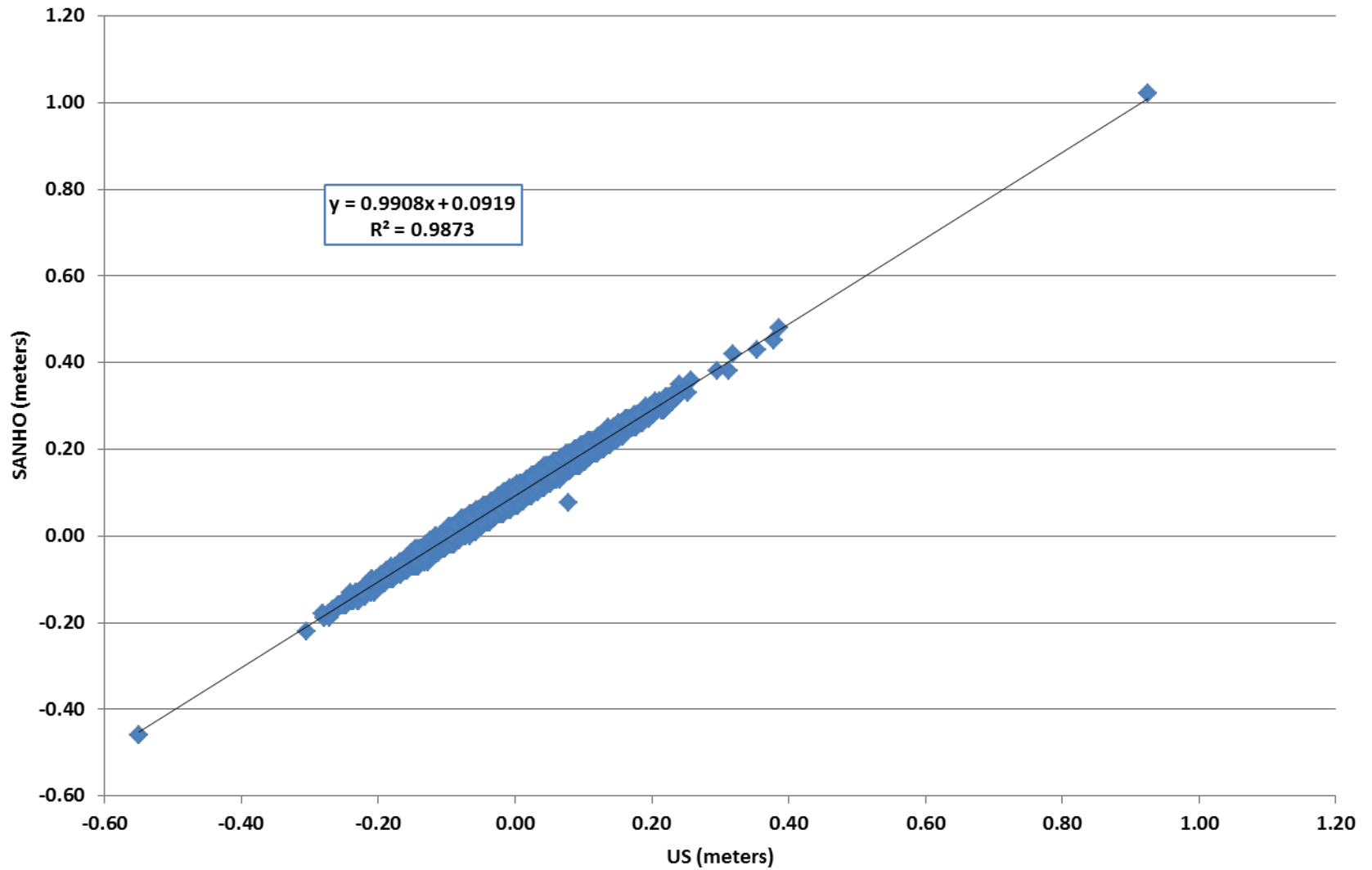
<b>Q-C statistic</b>	<b>US-SANHO</b>
<b>Average Difference</b>	<b>0.091</b>
<b>Standard Deviation</b>	<b>0.009</b>
<b>Max difference</b>	<b>0.118</b>
<b>Min difference</b>	<b>0.064</b>

Units in meters

# Comparison of Observed minus Predicted Hourly Residuals for Port Nolloth - 2010



# Comparison of Observed minus Predicted Residuals from US and SANHO for Port Nolloth - 2010



# Comparison of Observed minus Predicted Hourly Residuals for Port Nolloth – 2010

Q-C statistic	US	SANHO
Average Difference	0.000	0.092
Standard Deviation	0.078	0.077
Max difference	0.925	1.020
Min difference	-0.550	-0.460

Units in meters

