

V.3.3-ADJUST-T ADJUST TIDE OPERATION

Identifier: ADJUST-T

Application: All programs

Description: This Operation creates an adjusted hourly tidal time series using the adjustments created by Operation TIDEREV.

Observed and predicted tide extremums are identified and matched (see description of routine MXMN59 in Section VIII.3.3-TIDEREV). Maximum and minimum tide balances created by Operation TIDEREV are read and the tide extremums are set equal to the time matched predicted extreme plus associated tide balance. Hourly predicted tides are derived using a cosine interpolation between tide extremums. Observed hourly data is for the adjusted tide series up to start of run time.

The following is an example of Cosine interpolation in deriving tide at point x (see Figure 1):

$$\Phi = ((T_x - T_{MIN}) / dT) \pi$$

$$X_{T_x} = ((\cos(\Phi) + 1) / 2 * |Depth_{AdjMax} - Depth_{AdjMin}| + Depth_{Min})$$

Developed by: Northwest River Forecast Center

Allowable Data Time Intervals: 1 hour

Time Series Used: Time series used in this Operation are as follows:

<u>General Type</u>	<u>Dimn</u>	<u>Units</u>	<u>Use</u>	<u>Required</u>	<u>Data Time Interval</u>	<u>Missing Values Allowed</u>
Observed tide	L	FT	I	yes	1	no
Predicted tide	L	FT	I	yes	1	no
Tidel balance	L	FT	I	yes	24	no

<u>General Type</u>	<u>Dimn</u>	<u>Units</u>	<u>Use</u>	<u>Required</u>	<u>Data Time Interval</u>	<u>Missing Values Allowed</u>
Tide2 balance	L	FT	I	yes	24	no
Tide3 balance	L	FT	I	yes	24	no
Tide4 balance	L	FT	I	yes	24	no
Adjusted tide	L	FT	O	yes	1	no

Input Summary: The card input for this Operation is in free-format and is as follows:

<u>Card</u>	<u>Field</u>	<u>Format</u>	<u>Contents</u>
1	1	A72	User supplied information
2			Input time series definition:
	1	A8	Observed stage time series identifier
	2	A4	Observed stage time series data type code
	3	A8	Predicted stage time series identifier
	4	A4	Predicted stage time series data type code
3			Output time series definition:
	1	A8	Tide1 balance time series identifier
	2	A4	Tide1 balance time series data type code
	3	A8	Tide2 balance time series identifier
	4	A4	Tide2 balance time series data type code
	5	A8	Tide3 balance time series identifier
	6	A4	Tide3 balance time series data type code
	7	A8	Tide4 balance time series identifier
	8	A4	Tide4 balance time series data type code
	9	A8	Adjusted tide time series identifier
	10	A4	Adjusted tide time series data type code

Sample Input and Output: Sample input for this Operation is shown in

Figure 2. Sample output from the parameter print routine is shown in  
Figure 3. There is no output from the execution routine.

Figure 1. Example of Cosine interpolation in deriving tide at point x

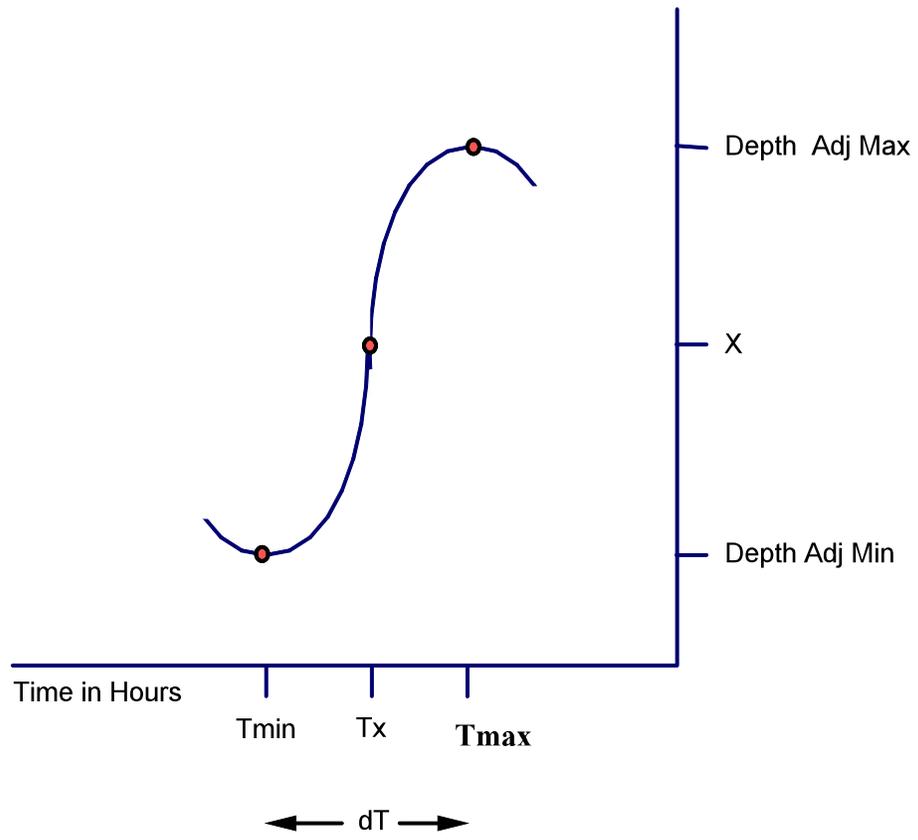


Figure 2. Sample card input for Operation ADJUST-T

```
ADJUST-T    ASTO3
TIDE ADJUSTMENT
ASTO3Y    TIDE ASTO3    STID
ASTID1Y   SSTG ASTID2Y  SSTG ASTID3Y  SSTG ASTID4Y  SSTG DWTIDAY  TIDE
```

Figure 3. Sample output from Operation ADJUST-T print parameter routine

```
*****
ADJUST-T OPERATION      NAME=ASTO3      PREVIOUS NAME=
*****

TIDE ADJUSTMENT      - VERSION      1
TIDE ADJUSTMENT

INPUT TIME SERIES                ID      CODE
  DWOPER OBSERVED STAGE          ASTO3Y  TIDE
  NOS      FORECAST STAGE        ASTO3   STID
  TIDE1 BALANCE                  ASTID1Y  SSTG
  TIDE2 BALANCE                  ASTID2Y  SSTG
  TIDE3 BALANCE                  ASTID3Y  SSTG
  TIDE4 BALANCE                  ASTID4Y  SSTG

PRIMARY OUTPUT TIME SERIES
  DW ADJUSTED STAGE              DWTIDAY  TIDE
```