V.3.3-TIDEREV TIDE BALANCE REVIEW OPERATION

Identifier: TIDEREV

Application: All programs

Description: This Operation compares observed and predicted tide
time series and creates adjustments that are used by Operation
ADJUST-T.

The predicted tide time series can be obtained from the National
Ocean Survey (NOS).

The Operation is designed for use with a semidiurnal or mixed tide
sequence. In the North Pacific generally four tides occur daily; two
highs and two lows. Operation TIDEREV displays high and low tide
balances, differences between observed and predicted data from the
beginning of run to present and creates and displays high and low
tide balances from present time to end of run.

Observed and predicted tide extremums are identified and matched.
Past balances from start run-time to present are created comparing
hourly observed tide data to hourly predicted tides and date/time
stamps are displayed (see Figure 1). Knowledge of past extrenum
balances allows the forecaster to modify future tide balances for
application to the predicted tides. Tidal modifications may be
deemed necessary to account for storm surges, a tidal wave or noticed
constant model biases. Future tide balances are estimated within the
Operation by multiplying the previous days balance (of corresponding
tide) by a factor of 0.8 (see Figure 1). In the Northwest this
factor seems to account well for the return to predicted values
following a storm surge or onshore flow sequence. To maintain like
tide characteristics, high-highs are compared to high-highs, low-lows
to low-lows, etc. Tides are sequenced one through four, not
restricted by time, thus allowing for the occasional fifth tide per
day.

Pairing the results from Operation TIDEREV and Operation ADJUST-T an
hourly adjusted tide time series can be created.

Operation TIDEREV assumes observed tide data is complete. A future
run date is allowed as long as predicted data is available.

The maximum run length is 30 days.

Developed by: Northwest River Forecast Center

Allowable Data Time Intervals: 1 hour

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

General Type	Dimn	Units	Use	Required	Form of Output T.S.	Data Time Interval	Missing Values Allowed
Observed tide	L	FT	I	yes	n/a	1	no
Predicted tide	L	FT	I	yes	n/a	1	no
Tide1 balance	L	FT	O	no	internal	24	no
Tide2 balance	L	FT	O	no	internal	24	no
Tide3 balance	L	FT	O	no	internal	24	no
Tide4 balance	L	FT	O	no	internal	24	no

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

Card	Field	Format	Contents
1	1	A72	User supplied information
2			Input time series definition:
	1	A8	Observed stage time series identifier
	2	A4	Observed stage 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

<u>Sample Input and Output</u>: Sample input for this Operation is shown in
Figure 1. Sample output from the parameter print routine is shown in
Figure 2. Sample output from the execution routine is shown in
Figure 3.

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                Figure 1. Sample card input for Operation TIDEREV


TIDEREV    ASTO3
TIDE REVIEW
  ASTO3 TIDE ASTO3 STID
  ASTID1 SSTG ASTID2 SSTG ASTID3 SSTG ASTID4 SSTG




        Figure 2. Sample output from Operation TIDEREV print parameter
                   routine


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 TIDEREV   OPERATION     NAME=ASTO3        PREVIOUS NAME=

 ********************


         TIDE BALANCE REVIEW -VERSION    1
         TIDE REVIEW


         INPUT TIME SERIES                ID       CODE
            DWOPER OBSERVED STAGE        ASTO3Y    TIDE
            NOS    FORECAST STAGE        ASTO3     STID

         PRIMARY OUTPUT TIME SERIES
            TIDE1 BALANCE                ASTID1Y   SSTG
            TIDE2 BALANCE                ASTID2Y   SSTG
            TIDE3 BALANCE                ASTID3Y   SSTG
            TIDE4 BALANCE                ASTID4Y   SSTG




        Figure 3. Sample output from Operation TIDEREV execution routine



     OBSERVED-PREDICTED=BALANCE   TIME    DATE
         8.7       8.3       .4   1200    3/11
          .1        .0       .1   1900    3/11
         8.5       8.1       .4    100    3/12
         1.9       1.5       .4    700    3/12
         9.0       8.3       .7   1300    3/12
          .7        .3       .4   1900    3/12
         8.6       8.0       .6    100    3/13

     ASTORIA BALANCES:

     DATE         3/11   3/12   3/13   3/14   3/15   3/16
     FIRST TIDE    .4     .7     .6E    .4E    .4E    .3E
     SECOND TIDE   .1     .4     .3E    .3E    .2E    .2E
     THIRD TIDE    .4     .6     .5E    .4E    .3E    .2E
     FOURTH TIDE   .4     .3E    .3E    .2E    .2E    .1E
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Notes:

Data are in English units.

An 'E' following a data value indicates it is estimated.