

**The following examples illustrate available COASTER functionality**

**Key Points to Remember**

COASTER processes results on a **PER CELL/PIXEL** basis (i.e., each cell is treated as a unique spatial unit within which all calculations are performed). As such, the calculations/results for any cell do not affect and are not affected by the calculations/results in any other cells.

COASTER performs no spatial aggregation/summarization other than clipping the images to the user-defined area of interest. Clipping is accomplished with the upper left and lower right corner coordinate boxes.

COASTER ignores February 29<sup>th</sup>, even during leap years when that date occurred.



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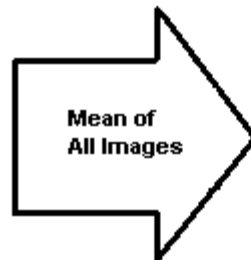
## EXAMPLE 1 - Summarize All Years

Online Form:

<input checked="" type="checkbox"/> Summarize	<input type="checkbox"/> Threshold	<input type="checkbox"/> Trends & Anomalies	Time Frame
Variables TMax (°C)	Variables [ ]	<input type="radio"/> Trend (1 band) <input type="radio"/> Anomaly (1 bd/yr) Variables [ ] Statistic [ ]	Start Date Month Day 5 15 End Date Month Day 5 31
Summary Statistic Mean	Threshold Type [ ]		Start Year 1997 End Year 1998
Summarize By All Years (1 band)	Comparison [ ] Min Max [ ] [ ]		

Behind the scenes:

Tmax 05/15/1997	Tmax 05/15/1998
Tmax 05/16/1997	Tmax 05/16/1998
Tmax 05/17/1997	Tmax 05/17/1998
Tmax 05/18/1997	Tmax 05/18/1998
Tmax 05/19/1997	Tmax 05/19/1998
Tmax 05/20/1997	Tmax 05/20/1998
Tmax 05/21/1997	Tmax 05/21/1998
Tmax 05/22/1997	Tmax 05/22/1998
Tmax 05/23/1997	Tmax 05/23/1998
Tmax 05/24/1997	Tmax 05/24/1998
Tmax 05/25/1997	Tmax 05/25/1998
Tmax 05/26/1997	Tmax 05/26/1998
Tmax 05/27/1997	Tmax 05/27/1998
Tmax 05/28/1997	Tmax 05/28/1998
Tmax 05/29/1997	Tmax 05/29/1998
Tmax 05/30/1997	Tmax 05/30/1998
Tmax 05/31/1997	Tmax 05/31/1998



The output in this case is a single-banded raster (.tif) containing the mean daily maximum temperature (based on the user-selected arguments for “variable” and “summary statistic”) for the 34 day (i.e. the selected time frame containing 17 days for each of the 2 years).

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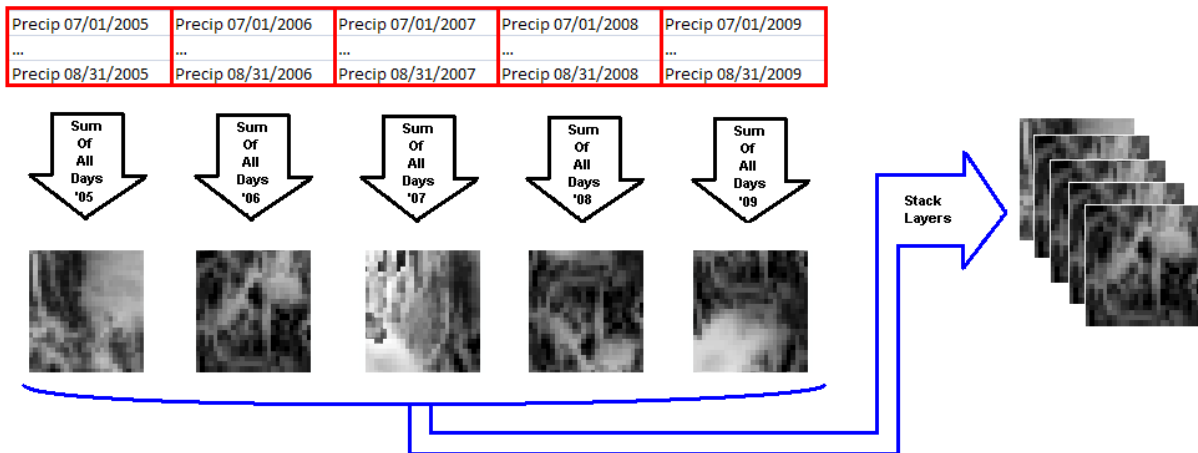
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## EXAMPLE 2 - Summarize Per Year

Online Form:

<input checked="" type="checkbox"/> Summarize	<input type="checkbox"/> Threshold	<input type="checkbox"/> Trends & Anomalies	Time Frame	
Variables Precip (mm)	Variables 	<input type="radio"/> Trend (1 band) <input type="radio"/> Anomaly (1 bd/yr) Variables 	Start Date Month Day	End Date Month Day
Summary Statistic Sum	Threshold Type 	Statistic 	7 1	8 31
Summarize By Per Year (1 bd/yr)	Comparison 		Start Year	End Year
	Min Max 		2005	2009

Behind the scenes:



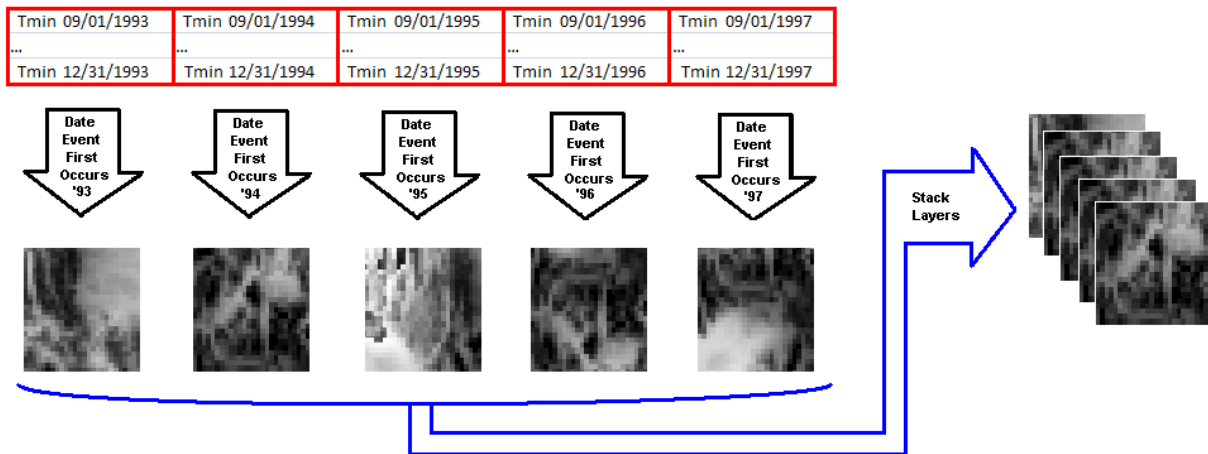
The output in this case is a five-banded raster (.tif) containing the total precipitation (based on the user-selected arguments for “variable” and “summary statistic”). Each band contains the per-year sum of all precipitation from within the 62 day time frame.

### EXAMPLE 3 – Threshold First Occurrence

Online Form:

<input type="checkbox"/> Summarize	<input checked="" type="checkbox"/> Threshold	<input type="checkbox"/> Trends & Anomalies	Time Frame			
Variables <input type="text"/>	Variables TMin (°C) <input type="text"/>	<input type="radio"/> Trend (1 band) <input type="radio"/> Anomaly (1 bd/yr)	Start Date		End Date	
Summary Statistic <input type="text"/>	Threshold Type 1st Occurrence (1 b) <input type="text"/>	Variables <input type="text"/>	Month	Day	Month	Day
Summarize By <input type="text"/>	Comparison Less Than <input type="text"/>	Statistic <input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	Min	Max	Start Year		End Year	
	<input type="text"/>	<input type="text"/>	<input type="text"/>		<input type="text"/>	

Behind the scenes:



The output in this case is a five-banded raster (.tif) containing the date of the year that the minimum temperature first dipped below freezing. The cell values in this case will be an integer value representing a day of the year (e.g., September 1<sup>st</sup> would be day 244, September 2<sup>nd</sup> would be day 245, and so on).

## EXAMPLE 4 – Threshold Count

Online Form:

Summarize       Threshold       Trends & Anomalies

Time Frame

Start Date		End Date	
Month	Day	Month	Day
9	1	12	31

Start Year	End Year
1993	1997

Variables:

Summary Statistic:

Summarize By:

Variables:

Threshold Type:

Comparison:

Min:  Max:

Variables:

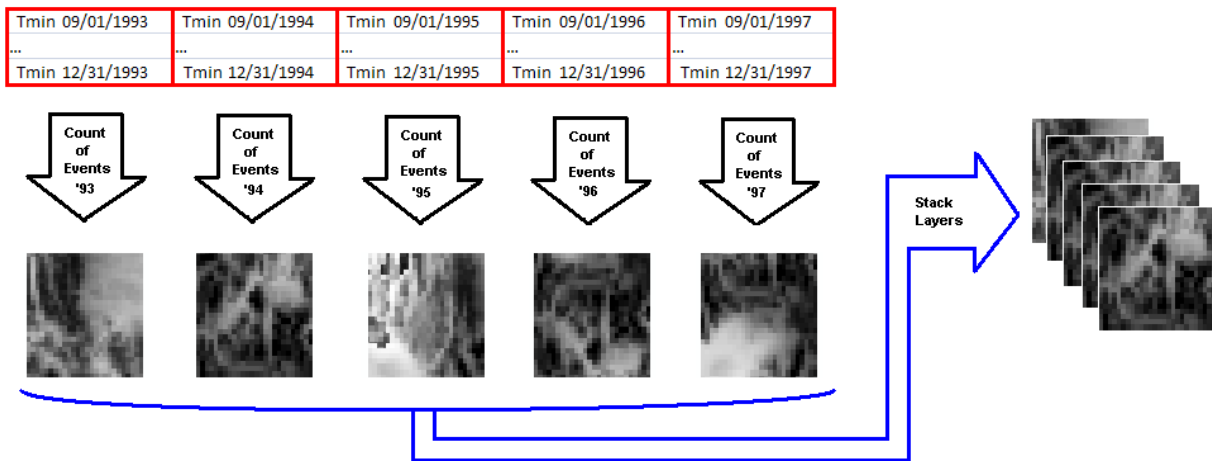
Statistic:

Trend (1 band)

Anomaly (1 bd/yr)

Results File Name:  Email Results To:

Behind the scenes:



The output in this case is a five-banded raster (.tif) containing the number of days per-year within the user-defined time frame that the minimum temperature first dipped below freezing. The cell values in this case will be an integer value representing the annual count.

## EXAMPLE 5 – Trend

Online Form:

Summarize       Threshold       Trends & Anomalies

**Time Frame**

Start Date		End Date	
Month	Day	Month	Day
3	15	6	15

Start Year	End Year
1980	2009

Variables: [ ]  
Summary Statistic: [ ]  
Summarize By: [ ]

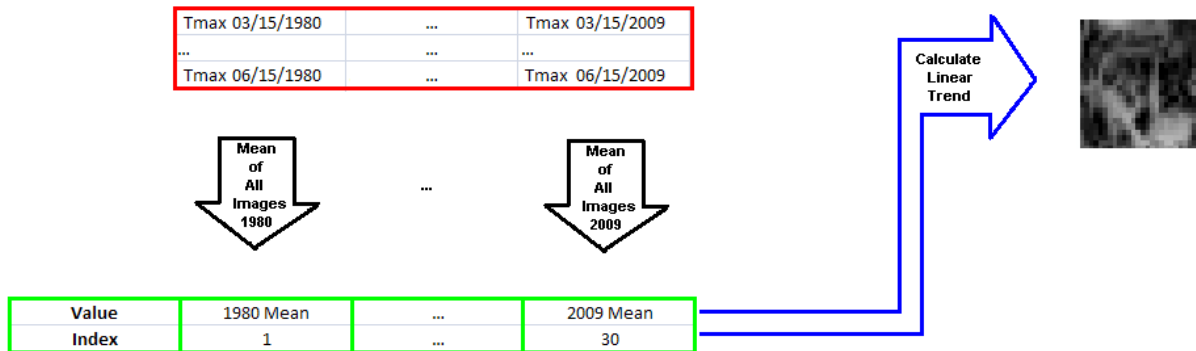
Variables: [ ]  
Threshold Type: [ ]  
Comparison: [ ]  
Min: [ ]    Max: [ ]

Trend (1 band)  
 Anomaly (1 bd/yr)

Variables: Tmax (°C) [ ]  
Statistic: Mean [ ]

Results File Name: dan.test.115    Email Results To: weiss@yellowstoneresearch.org

Behind the scenes:



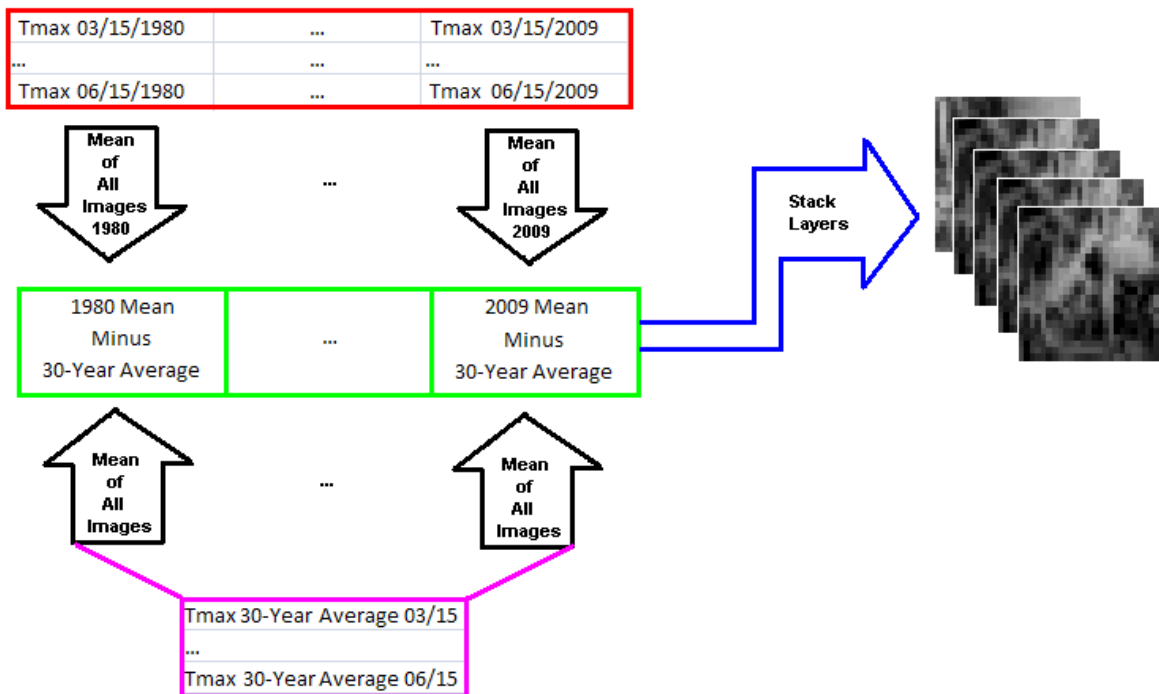
The output in this case is a one-banded raster (.tif) containing the slope of the linear relationship between the Value and Index numbers. The cell values in the resulting image are derived by extracting the slope coefficient from an OLS regression equation derived for each cell. Positive values indicate an increasing trend and vice-versa.

## EXAMPLE 6 – Anomalies

Online Form:

<input type="checkbox"/> Summarize	<input type="checkbox"/> Threshold	<input checked="" type="checkbox"/> Trends & Anomalies	Time Frame			
Variables <input type="text"/>	Variables <input type="text"/>	<input type="radio"/> Trend (1 band) <input checked="" type="radio"/> Anomaly (1 bd/yr)	Start Date		End Date	
Summary Statistic <input type="text"/>	Threshold Type <input type="text"/>	Variables TMax (°C)	Month	Day	Month	Day
Summarize By <input type="text"/>	Comparison <input type="text"/>	Statistic Mean	3	15	6	15
	Min <input type="text"/> Max <input type="text"/>		Start Year		End Year	
			1980		2009	

Behind the scenes:



The output in this case is a thirty-banded raster (.tif) containing the per-year difference from “normal” for the 3-month time period. Positive values indicate that the mean 3-month max temperature for a given year is above the normal mean temperature for the same period. The normal values based upon 30-year mean daily values, from which a mean is calculated for the user-defined 3-month period.