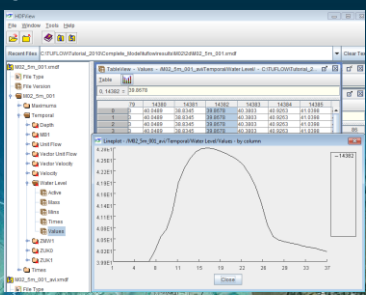


XMDF Output Files

- Alternate Viewers
 - HDFViewer
 - HDF Explorer
 - Matlab

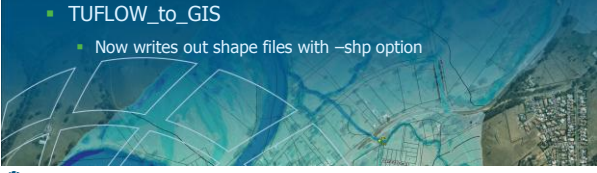


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BMT WBM TUFLOW

ArcGIS file formats

- Now written (and read) by TUFLOW for GIS based TUFLOW outputs
 - 1D results, messages, check files
 - GIS Format == SHP
 - SHP Projection == Projection.prj
- TUFLOW_to_GIS
 - Now writes out shape files with -shp option

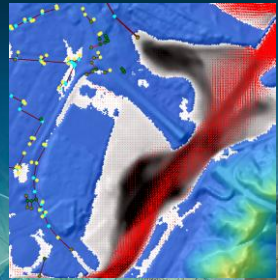


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BMT WBM TUFLOW

ArcGIS file formats

- Three file types
 - _P (points)
 - _L (lines)
 - _R (regions)




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BMT WBM TUFLOW

User Defined Output

- Model Output == Area1 | Area2
- Output Control File == a.toc that contains blocks such as:


```
Define Output == Area1
Start Map Output == 1
Output Folder == ..\results\area1 | Send TUFLOW 2D output to this folder
Map Output Format == xmdf
Map Output Data Types == hV
Map Output Area == mi\Area1.mif
.....
End Define
```

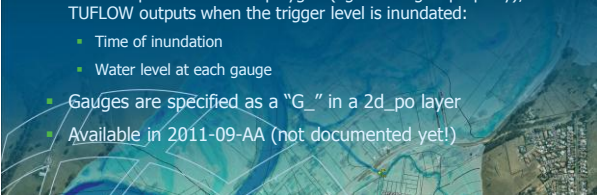


BMT WBM 7 TUFLOW

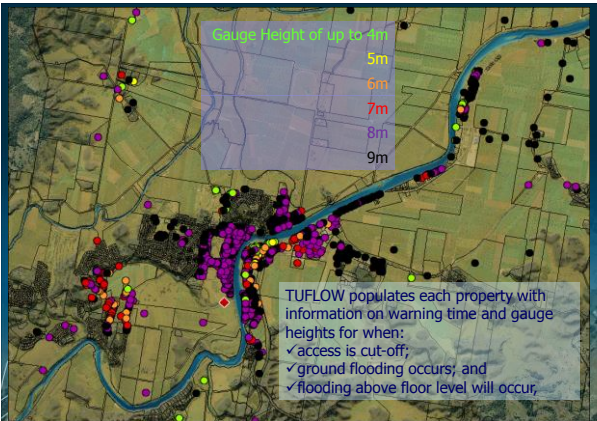
Gauge Outputs

- New .tgc command:


```
Read GIS Gauge Output == mi\2d_go_buildings.mif
```
- Trigger level (eg. floor level) at each GIS object provided otherwise ZC (lowest ZC for a polygon) used
- For each point location or polygon (eg. building or property), TUFLOW outputs when the trigger level is inundated:
 - Time of inundation
 - Water level at each gauge
- Gauges are specified as a "G_" in a 2d_po layer
- Available in 2011-09-AA (not documented yet!)



BMT WBM 8 TUFLOW




Gauge Height of up to 4m
5m
6m
7m
8m
9m



TUFLOW populates each property with information on warning time and gauge heights for when:
 ✓ access is cut-off;
 ✓ ground flooding occurs; and
 ✓ flooding above floor level will occur.

BMT WBM TUFLOW

Animations - General

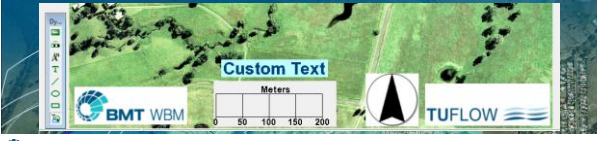
- Tips
 - Output Frequency (high as possible!)
 - Avoid running the animation for long periods where nothing is happening
 - Avoid cluttering the animation (clear and concise)
 - Allow yourself time: avoid starting at 5pm the day before a meeting....





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Animations in SMS

- Annotation Module
 - Logos
 - Scale bars / North Arrows
 - Text



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Animations in SMS – 2D

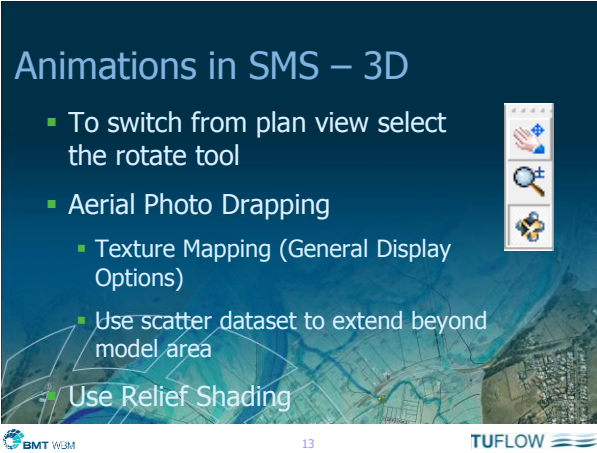
- Example in SMS



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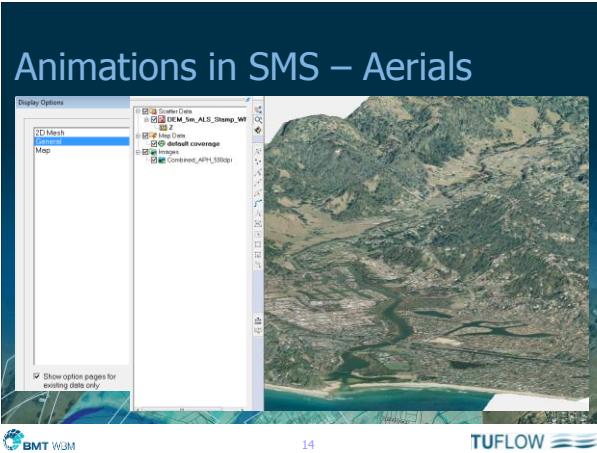
Animations in SMS – 3D

- To switch from plan view select the rotate tool
- Aerial Photo Drapping
 - Texture Mapping (General Display Options)
 - Use scatter dataset to extend beyond model area
- Use Relief Shading



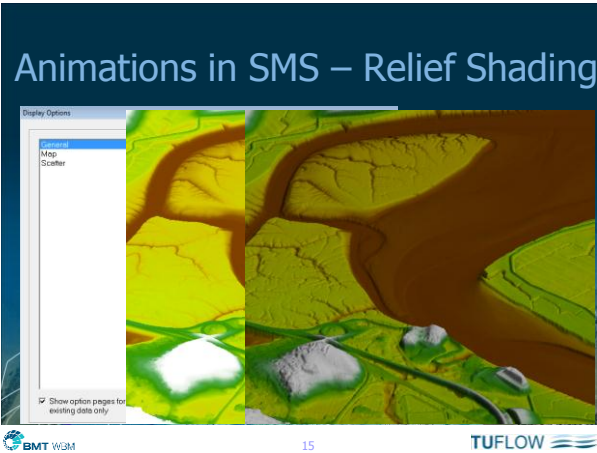
BMT WBM 13 TUFLOW

Animations in SMS – Aerials



BMT WBM 14 TUFLOW


Animations in SMS – Relief Shading



BMT WBM 15 TUFLOW

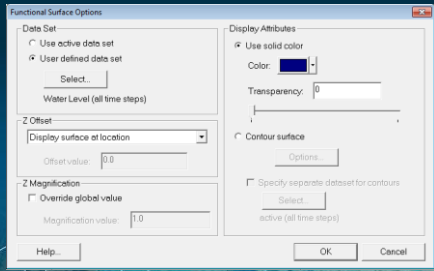
Animations in SMS – 3D

- The functional surface can be used to:
 - Display multiple datasets
 - Display results at the correct elevation (not at the topography surface)
- A separate dataset can be specified for contouring



BMT WBM 16 TUFLOW

SMS Functional Surfaces



Functional Surface Options

Data Set

Use active data set

User defined data set

Select...

Water Level (all time steps)

Z Offset

Display surface at location

Offset value: 0.0

Z Magnification

Override global value

Magnification value: 1.0

Display Attributes

Use solid color

Color: [Color Picker]

Transparency: 0

Contour surface

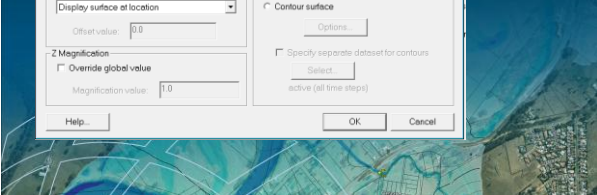
Options...

Specify separate dataset for contours

Select

active (all time steps)


Help... OK Cancel



BMT WBM 17 TUFLOW

Animation Examples

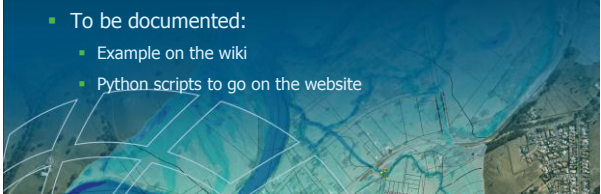
- [Oblique Depth Shaded](#)
- [Oblique Hazard Shaded](#)
- [Lab Dambreak](#)
- [Currumbin Creek](#)



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Animations in ArcGIS

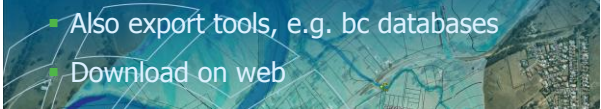
- Geodatabase
 - Raster Catalogue
 - Enable temporal data in catalogue
 - Time-slider
- To be documented:
 - Example on the wiki
 - Python scripts to go on the website



BMT WBM 19 TUFLOW

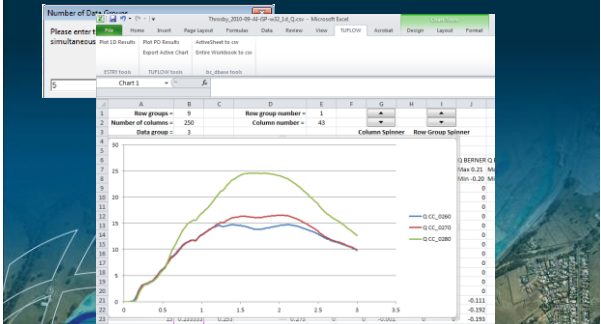
Excel Utilities

- Viewing timeseries of results (1D and PO)
 - Exporting as .jpg files
- Animating profiles
 - Exported images can be used to create a movie file, e.g. using Windows Movie Maker
- Also export tools, e.g. bc databases
- Download on web



BMT WBM 20 TUFLOW


Excel Utilities





BMT WBM 21 TUFLOW

Excel Animations


- [Profile, tidal model](#)
- [Profile \(multiple events\)](#)
- [Cross-section, levels](#)





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Underutilised Outputs

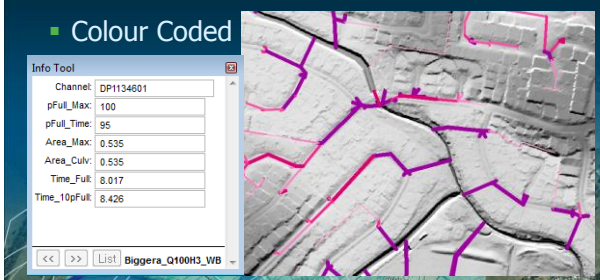
- 1D outputs
 - Culvert Capacity Output
 - Water Level Line Points
- 2D outputs
 - Calibration Points
 - Long Profiles
 - Evacuation Routes





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Culvert Capacity and Area

- [_ccA.mif \(or .shp\)](#)
- Colour Coded

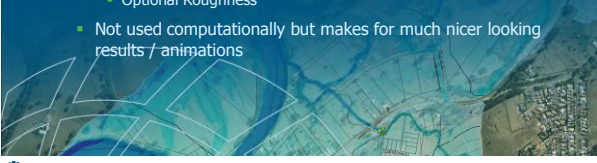


Channel	DP1134601
pFull_Max	100
pFull_Time	95
Area_Max	0.535
Area_Culv	0.535
Time_Full	8.017
Time_10pFull	8.426

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Water Level Lines


- Two inputs layers
 - Lines (commonly used)
 - Points (rarer)
- Import WLLp check file
 - Inspect Elevations
 - Optional Roughness
- Not used computationally but makes for much nicer looking results / animations



BMT WBM 25 TUFLOW

Cutoff Depths for mapping


- Useful for direct rainfall modelling
 - Map Cutoff Depth == <depth> (.tcf)
- Updated asc_to_asc.exe
 - asc_to_asc.exe -cd0.1 depth.asc
 - asc_to_asc.exe -cd0.1 depth.asc levels.asc
 - Optional -output switch to set output name



BMT WBM 26 TUFLOW

Calibration Points

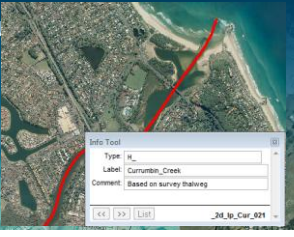
- .tcf command
 - Calibration Points MI File ==
- Assigns the peak water level as an additional attribute
- Up to 10 files can be specified



BMT WBM 27 TUFLOW

Long Profiles

- Read in prior to simulation (as per PO)
- Can now output velocity (Type = V)
- Set output interval
 - Time Series Output

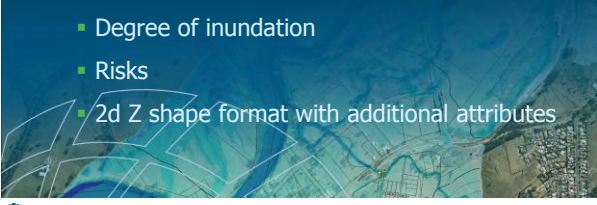


The screenshot shows a map with a red profile line. An Info Tool window is open, displaying the following information:
Type: V
Label: Curnumbin_Creek
Comment: Based on survey thalweg
Buttons: [cc] [xx] [List]
Filename: _M_1p_Cur_001

BMT WBM 28 TUFLOW

Evacuation Routes (2d_zshr)

- Useful for:
 - Warning Times (time to cut off)
 - Duration the routes are cut-off
 - Degree of inundation
 - Risks
 - 2d Z shape format with additional attributes

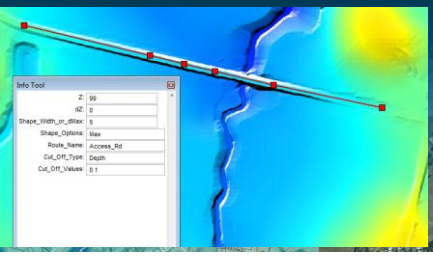


The screenshot shows a map with several evacuation routes marked in white. The background is a color-coded map showing inundation levels.

BMT WBM 29 TUFLOW

Evacuation Routes (2d_zshr)

- GIS inputs
 - Multiple cut off values possible

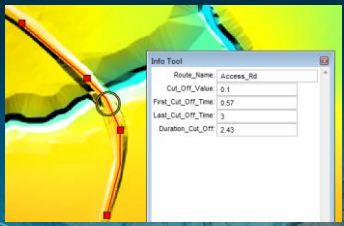


The screenshot shows a map with a red profile line and an Info Tool window. The Info Tool window displays the following information:
Z: 99
d0: 0
Shape_Interval: 5
Shape_Options: Max
Route_Name: Access_Rd
Cut_Off_Type: Depth
Cut_Off_Values: 1.5

BMT WBM 30 TUFLOW

Evacuation Routes

- Outputs
 - Points
 - Map Output (time varying data)
 - Animation



Route_Name	Access_Rd
Out_Off_Value	0.1
Final_Out_Off_Time	0.57
Leak_Out_Off_Time	3
Duration_Out_Off	2.43

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Discussion

- Any questions?
- Any suggestions?



BMT WBM 32 TUFLOW
