

## TEMPLATE FOR ANALOGUE EXPERIMENTS

2008 Analogue – Numerical model comparisons ([www.geodynamics.no/benchmarks](http://www.geodynamics.no/benchmarks))

For an objective quantification of the experiments it is extremely important that documentation of the experiments is provided in numbers and figures. Images can be sent to us in jpg with compression kept at a minimum, animations preferably in gif, but mpeg or quicktime is accepted too (please specify pc or mac).

**For experiment 1A jpeg file size should be such that 20 cm model width becomes 12 cm image width. For experiments 1B and 2, 35 cm model width should become 12 cm image width.**

Note that experiments 1B and 2 should be run twice! Please number the experiments in file names as Exp1A and Exp1B, respectively, Exp2A and Exp2B.

Prerequisites for all experiments: motor-driven with velocity of 2.5 cm/h; minimum width 25 cm (measured parallel to mobile wall); Alkor foil on all walls and base; use of “Bern” sand only; use of prescribed sieve, 20 cm filling height and filling rate of 250 ml/minute; no exit slot at mobile wall; room temperature and humidity ideally at 21°C and 30%, respectively (at these conditions the material properties of the “Bern” sand have been determined). Numbers in brackets in the tables below refer to “required results” described in the pdf of the analogue-numerical model comparison.

**Do not forget to place a scale in each photograph/image and to indicate the stage of deformation in each photograph/image (!). Please use similar file names as suggested in the tables.**

Labs are encouraged to monitor the side views of their experiments with a digital camera. This will make it possible to establish the spatial and temporal pattern of deformation in the analogue experiments using high-resolution optical image correlation techniques. **For further details and where to upload the images, please see section 6 of the PDF.**

**A special template is available for those labs that analyse their experiments with X-ray computed tomography. Please contact [schreurs@geo.unibe.ch](mailto:schreurs@geo.unibe.ch) for this special template.**

Questions or comments? Please contact Guido Schreurs, [schreurs@geo.unibe.ch](mailto:schreurs@geo.unibe.ch)

## EXPERIMENT 1A – BRITTLE COMPRESSIONAL WEDGE, TABLE 1

	Example
Name(s) of modeller(s)	
Room temperature and humidity at time of experiment	
Width of model parallel to mobile wall (cm)	
Velocity ( $2.5 \text{ cm h}^{-1}$ )	
(2) File name of cross section animation with scale and deformation stages indicated. Please show cross-sectional evolution with mobile wall moving from right to left (!)	Example: Toronto_exp1A_section_animation.gif
(5) File name of surface view animation with scale and stages indicated	Example: Toronto_exp1A_topview_animation.gif
(6) File name of surface photograph at 4.0 cm shortening of the basal domain over which the wall moved (including wall itself). To check whether or not sand escaped below exit slot.	Example: Toronto_exp1A_topview_with_wall.jpg
(7) File name of section through middle of model domain at 4 cm of shortening	Example: Toronto_exp1A_section_central.jpg
Location of section:	Example: 20 cm (i.e. width of model parallel to mobile wall would have been 40 cm)

**EXPERIMENT 1A, TABLE 2**

Shortening (cm)	(1) Cross-section file name	(4) Surface view file name	(8) Surface slope measured through glass sidewall	(8) Final surface slope through middle of model at 4 cm shortening  <b>Location of section: cm</b>
0	Toronto_exp1A_section_00mm.jpg	Toronto_exp1A_topview_00mm.jpg		-----
0.5	Toronto_exp1A_section_05mm.jpg	Toronto_exp1A_topview_05mm.jpg		-----
1.0	etc.	etc.		-----
1.5				-----
2.0				-----
2.5				-----
3.0				-----
3.5				-----
4.0				

**EXPERIMENT 1B – BRITTLE COMPRESSIONAL WEDGE, TABLE 3**

This experiment is run twice (Exp 1A and Exp1B)

	Example
Name(s) of modeller(s)	
Room temperature and humidity at time of experiment	
Width of model parallel to mobile wall (cm)	
Velocity ( $2.5 \text{ cm h}^{-1}$ )	
(2) File name of cross section animation with scale and deformation stages indicated in each section. Please show cross-sectional evolution with mobile wall moving from right to left (!)	Example: Toronto_exp1B_section_animation.gif
(5) File name of surface view animation with scale and deformation stages indicated in each surface view	Example: Toronto_exp1B_topview_animation.gif
(6) File name of surface photograph at 10.0 cm shortening of the basal domain over which the wall moved (including wall itself). To check whether sand escaped below exit slot.	Example: Toronto_exp1B_topview_wall.jpg
(7a) File name of section at 10 cm of shortening at 25% of along-strike-width  Location of section:	Example: Toronto_exp1B_section_25%.jpg  Example: 10 cm (i.e. width of model parallel to mobile wall would have been 40 cm)
(7b) File name of section at 10 cm of shortening at 50 % minus 2 cm of along-strike-width  Location of section:	Example: Toronto_exp1B_section_50%-2cm.jpg  Example: 18 cm (i.e. width of model parallel to mobile wall would have been 40 cm)
(7c) File name of section at 10 cm of shortening at 50% of along-strike-width  Location of section:	Example: Toronto_exp1B_section_50%.jpg  Example: 20 cm
(7d) File name of section at 10 cm of shortening at 50% plus 2 cm of along-strike-width  Location of section:	Example: Toronto_exp1B_section_50%+2cm.jpg  Example: 22 cm
(7e) File name of section at 10 cm of shortening at 75% of along-strike-width  Location of section:	Example: Toronto_exp1B_section_50%+2cm.jpg  Example: 30 cm
(7f) File name of surface view with exact location of 5 cross-sections (7a-7e)	Example: Toronto_exp1B_topview_5sections.jpg

**EXPERIMENT 1B, TABLE 4**

Shortening (cm)	(1) Cross-section file name	(4) Surface view file name (3D)	(8) Surface slope at every 0.5 cm of shortening (see <b>fig. 10 of pdf</b> )	(8) File name of figure in which surface slope measurements have been made (at every 0.5 cm of shortening)
0	Toronto_exp1B_section_00mm.jpg	Toronto_exp1B_topview_00mm.jpg		Toronto_exp1B_section_00mm.jpg
0.2	Toronto_exp1B_section_02mm.jpg	Toronto_exp1B_topview_02mm.jpg	-----	-----
0.4	Toronto_exp1B_section_04mm.jpg	Toronto_exp1B_topview_04mm.jpg	-----	-----
0.5	Toronto_exp1B_section_05mm.jpg	Toronto_exp1B_topview_05mm.jpg		Toronto_exp1B_section_05mm.jpg
0.6	Etc.	Etc.	-----	-----
0.8			-----	-----
1.0				Toronto_exp1B_section_10mm.jpg
1.5				Toronto_exp1B_section_15mm.jpg
2.0				Etc.
2.5				
3.0				

3.5				
4.0				
4.5				
5.0				
5.5				
6.0				
6.5				
7.0				
7.5				
8.0				
8.5				
9.0				
9.5				
10.0				



**EXPERIMENT 1B - BRITTLE COMPRESSIONAL WEDGE, TABLE 6**

<p>(15) Shear zone width at 10 cm of shortening (see Fig. 12 of pdf)</p> <p>F = forward thrust B = backthrust; mark thrusts in order of their formation: F1, F2, F3, etc. and B1, B2, B3, etc.</p>	<p>(15) <b>File name of figure</b> (draw measurements on photograph): e.g.:</p>
<p>e.g. F1: 4 mm</p>	<p>e.g. Toronto_Exp1B _F1_sz_width</p>
<p>e.g. B1: 3 mm</p>	<p>e.g. Toronto_Exp1B _B1_sz_width</p>
<p>Etc.</p>	<p>Etc.</p>

## EXPERIMENT 2 – BRITTLE SHORTENING – STIFF CARTON, TABLE 7

This experiment is run twice (Exp 2A and Exp2B)

	Example
Name(s) of modeller(s)	
Room temperature and humidity at time of experiment	
Width of model parallel to mobile wall (cm)	
Velocity ( $2.5 \text{ cm h}^{-1}$ )	
(2) File name of cross section animation with scale and deformation stages indicated in each section. Please show cross-sectional evolution with mobile wall moving from right to left (!)	Example: Toronto_exp2A_section_animation.gif
(5) File name of surface view animation with scale and deformation stages indicated in each surface view	Example: Toronto_exp2A_topview_animation.gif
(6) File name of surface photograph at 10.0 cm shortening of the basal domain over which the wall moved (including wall itself). To check whether sand escaped below exit slot.	Example: Toronto_exp2A_topview_wall.jpg
(7a) File name of section at 10 cm of shortening at 25% of along-strike-width  Location of section:	Example: Toronto_exp2A_section_25%.jpg  Example: 10 cm (i.e. width of model parallel to mobile wall would have been 40 cm)
(7b) File name of section at 10 cm of shortening at 50 % minus 2 cm of along-strike-width  Location of section:	Example: Toronto_exp2A_section_50%-2cm.jpg  Example: 18 cm (i.e. width of model parallel to mobile wall would have been 40 cm)
(7c) File name of section at 10 cm of shortening at 50% of along-strike-width  Location of section:	Example: Toronto_exp2A_section_50%.jpg  Example: 20 cm
(7d) File name of section at 10 cm of shortening at 50% plus 2 cm of along-strike-width  Location of section:	Example: Toronto_exp2A_section_50%+2cm.jpg  Example: 22 cm
(7e) File name of section at 10 cm of shortening at 75% of along-strike-width  Location of section:	Example: Toronto_exp2A_section_50%+2cm.jpg  Example: 30 cm
(7f) File name of surface view with exact location of 5 cross-sections (7a-7e)	Example: Toronto_exp2A_topview_5sections.jpg

**EXPERIMENT 2 – BRITTLE SHORTENING – STIFF CARTON, TABLE 8**

Shortening (cm)	(1) Cross-section file name	(4) Surface view file name	(8) Surface slope at every 0.5 cm of shortening (see fig. 10 of pdf)	(8) File name of figure in which surface slope measurements have been made (at every 0.5 cm of shortening)
0	Toronto_exp2A_section_00mm.jpg	Toronto_exp2A_topview_00mm.jpg	0	-----
0.2	Toronto_exp2A_section_02mm.jpg	Toronto_exp2A_topview_02mm.jpg	-----	-----
0.4	Toronto_exp2A_section_04mm.jpg	Toronto_exp2A_topview_04mm.jpg	-----	-----
0.5	Toronto_exp2A_section_05mm.jpg	Toronto_exp2A_topview_05mm.jpg		Toronto_exp2A_section_05mm.jpg
0.6	Etc.	Etc.	-----	-----
0.8			-----	-----
1.0				Toronto_exp2A_section_10mm.jpg
1.5				Toronto_exp2A_section_15mm.jpg
2.0				Etc.
2.5				
3.0				

3.5				
4.0				
4.5				
5.0				
5.5				
6.0				
6.5				
7.0				
7.5				
8.0				
8.5				
9.0				
9.5				
10.0				



**EXPERIMENT 2 – BRITTLE SHORTENING – STIFF CARTON, TABLE 10**

<p>(15) Shear zone width at 10 cm of shortening (see Fig. 12 of pdf)</p> <p>F = forward thrust B = backthrust; mark thrusts in order of their formation: F1, F2, F3, etc. and B1, B2, B3, etc.</p>	<p>(15) <b>File name of figure</b> (draw measurements on photograph): e.g.:</p>
<p>e.g. F1: 4 mm</p>	<p>e.g. Toronto_Exp2A_F1_sz_width</p>
<p>e.g. B1: 3 mm</p>	<p>e.g. Toronto_Exp2A_B1_sz_width</p>
<p>Etc.</p>	<p>Etc.</p>