**Supplementary material**

**Table S1.** Compilation of main experimental results (type and number of drainage elements, type of fast-flow regimes, number of surging episodes, drainage cover index (Dci) and lobe cover index (Lci)) for the 22 experiments conducted with similar initial parameters.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **N°****experiment** | **Nb of tunnel valleys** | **Nb of channels** | **Surge-like flow regime** | **Stream-like flow regime** | **Nb of surgingepisodes** | **Dci (%)** | **Lci (%)** |
| **1** | 1 | 0 | ● |  | 2 | 13,5 | 10,4 |
| **2** | 3 | 0 | ● |  | 2 | 21,2 | 4,9 |
| **3** | 2 | 0 | ● |  | 2 | 18,8 | 5,4 |
| **4** | 1 | 6 |  | ● | 1 | 6,8 | 29,7 |
| **5** | 2 | 6 |  | ● | 3 | 4,5 | 20,1 |
| **6** | 2 | 2 |  | ● | 2 | 4,5 | 26,3 |
| **7** | 3 | 0 | ● |  | 2 | 13,5 | 11,2 |
| **8** | 5 | 3 |  | ● | 2 | 9,2 | 34,2 |
| **9** | 6 | 1 | ● |  | 1 | 25,2 | 12,1 |
| **10** | 1 | 0 | ● |  | 1 | 18 | 10,1 |
| **11** | 1 | 0 | ● |  | 2 | 21,3 | 9,8 |
| **12** | 4 | 0 | ● |  | 1 | 18,5 | 15,3 |
| **13** | 8 | 1 | ● |  | 3 | 20,2 | 15,5 |
| **14** | 1 | 0 | ● |  | 1 | 18,1 | 8 |
| **15** | 1 | 1 | ● |  | 2 | 3,3 | 10,9 |
| **16** | 2 | 15 |  | ● | 1 | 8 | 25,2 |
| **17** | 2 | 0 | ● |  | 3 | 10,9 | 11,8 |
| **18** | 7 | 0 | ● |  | 1 | 36,4 | 9,5 |
| **19** | 2 | 0 | ● |  | 2 | 41,8 | 9,6 |
| **20** | 2 | 0 | ● |  | 3 | 15,9 | 10,8 |
| **21** | 4 | 0 | ● |  | 1 | 13,6 | 14,3 |
| **22** | 2 | 0 | ● |  | 2 | 5,5 | 13,5 |