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*Supplement of*

## **Controls on slope-wash erosion rates in the Mojave Desert**

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**Supplementary material – Rock fragments, <sup>137</sup>Cs activities and inventories per soil samples,  
and soil erosion per soil profile**

| Site          | Soil pit | Depth (cm) | >2mm (%) | <2mm (%) | Avg. rock frag. in profile (%) | Cs-137 activity (mBq/g) | Uncertainty (mBq/g) | Cs-137 inventory (Bq/m <sup>2</sup> ) | Soil erosion (t ha <sup>-1</sup> yr <sup>-1</sup> ) |
|---------------|----------|------------|----------|----------|--------------------------------|-------------------------|---------------------|---------------------------------------|---|
| BRH S. aspect | 1        | 0-3        | 19%      | 81%      | 26%                            | 4.35                    | 0.51                | 163.1                                 | -12.6   |
|               |          | 3-6        | 45%      | 55%      |                                | 0                       | -                   | 0.0                                   |   |
|               |          | 6-9        | 7%       | 93%      |                                | 0                       | -                   | 0.0                                   |   |
|               | 2        | 0-3        | 33%      | 67%      | 38%                            | 0                       | -                   | 0.0                                   | -51.85  |
|               |          | 3-6        | 40%      | 60%      |                                | 0                       | -                   | 0.0                                   |   |
|               |          | 6-9        | 47%      | 53%      |                                | 0                       | -                   | 0.0                                   |   |
|               | 3        | 0-3        | 33%      | 67%      | 31%                            | 2.52                    | 0.61                | 94.5                                  | -14.1   |
|               |          | 3-6        | 41%      | 59%      |                                | 1.47                    | 1.42                | 55.2                                  |   |
|               |          | 6-9        | 20%      | 80%      |                                | 0                       | -                   | 0.0                                   |   |
|               | 4        | 0-3        | 40%      | 60%      | 23%                            | 3.70                    | 0.59                | 138.7                                 | -14.6   |
|               |          | 3-6        | 7%       | 93%      |                                | 0                       | -                   | 0.0                                   |   |
|               |          | 6-9        | 14%      | 86%      |                                | 0                       | -                   | 0.0                                   |   |
|               | 5        | 0-3        | 20%      | 80%      | 10%                            | 0                       | -                   | 0.0                                   | -51.85  |
|               |          | 3-6        | 6%       | 94%      |                                | 0                       | -                   | 0.0                                   |   |
|               |          | 6-9        | 4%       | 96%      |                                | 0                       | -                   | 0.0                                   |   |
|               | 6        | 0-3        | 26%      | 74%      | 23%                            | 5.44                    | 0.94                | 203.9                                 | -10.8   |
|               |          | 3-6        | 17%      | 83%      |                                | 0                       | -                   | 0.0                                   |   |
|               |          | 6-9        | 26%      | 74%      |                                | 0                       | -                   | 0.0                                   |   |
|               | 7        | 0-3        | 20%      | 80%      | 21%                            | 4.00                    | 1.12                | 150.1                                 | -13.8   |
|               |          | 3-6        | 13%      | 87%      |                                | 0                       | -                   | 0.0                                   |   |
|               |          | 6-9        | 31%      | 69%      |                                | 0                       | -                   | 0.0                                   |   |
|               | 8        | 0-3        | 4%       | 96%      | 7%                             | 0                       | -                   | 0.0                                   | -51.85  |
|               |          | 3-6        | 8%       | 92%      |                                | 0                       | -                   | 0.0                                   |   |
|               |          | 6-9        | 11%      | 89%      |                                | 0                       | -                   | 0.0                                   |   |
| BRH N. aspect | 9        | 0-3        | 1%       | 99%      | 1%                             | 0                       | -                   | 0.0                                   | -51.85  |
|               |          | 3-6        | 0%       | 100%     |                                | 0                       | -                   | 0.0                                   |   |
|               |          | 6-9        | 0%       | 100%     |                                | 0                       | -                   | 0.0                                   |   |
|               | 10       | 0-3        | 31%      | 69%      | 22%                            | 2.40                    | 0.96                | 90.1                                  | -17.2   |
|               |          | 3-6        | 8%       | 92%      |                                | 0                       | -                   | 0.0                                   |   |
|               |          | 6-9        | 13%      | 87%      |                                | 0                       | -                   | 0.0                                   |   |
|               | 11       | 0-3        | 43%      | 57%      | 39%                            | 6.03                    | 0.61                | 226.0                                 | -10.1   |
|               |          | 3-6        | 29%      | 71%      |                                | 0                       | -                   | 0.0                                   |   |
|               |          | 6-9        | 40%      | 60%      |                                | 0                       | -                   | 0.0                                   |   |
|               | 12       | 0-3        | 10%      | 64%      | 17%                            | 3.21                    | 1.01                | 120.4                                 | -14.9   |
|               |          | 3-6        | 26%      | 109%     |                                | 0                       | -                   | 0.0                                   |   |
|               |          | 6-9        | 17%      | 83%      |                                | 0                       | -                   | 0.0                                   |   |
|               | 13       | 0-3        | 16%      | 84%      | 11%                            | 4.03                    | 0.34                | 151.1                                 | -10.6   |
|               |          | 3-6        | 10%      | 90%      |                                | 1.59                    | 0.91                | 59.4                                  |   |
| 6-9           |          | 0%         | 100%     | 0        |                                | -                       | 0.0                 |                                       |   |
| 14            | 0-3      | 6%         | 94%      | 17%      | 0                              | -                       | 0.0                 | -51.85                                |   |
|               | 3-6      | 16%        | 84%      |          | 0                              | -                       | 0.0                 |                                       |   |

**Supplementary material – Rock fragments, <sup>137</sup>Cs activities and inventories per soil samples,  
and soil erosion per soil profile**

|       |   |     |     |     |     |       |      |       |       |
|-------|---|-----|-----|-----|-----|-------|------|-------|-------|
|       |   | 6-9 | 56% | 44% |     | 0     | -    | 0.0   |       |
| 15    |   | 0-3 | 26% | 74% | 21% | 3.46  | 1.05 | 129.7 | -7.8  |
|       |   | 3-6 | 19% | 81% |     | 4.67  | 0.56 | 175.0 |       |
|       |   | 6-9 | 19% | 81% |     | 0     | -    | 0.0   |       |
| 16    |   | 0-3 | 27% | 73% | 21% | 8.49  | 0.85 | 318.5 | -3.8  |
|       |   | 3-6 | 16% | 84% |     | 5.06  | 1.09 | 189.7 |       |
|       |   | 6-9 | 17% | 83% |     | 0     | -    | 0.0   |       |
| <hr/> |   |     |     |     |     |       |      |       |       |
| GM2   | 1 | 0-3 | 48% | 52% | 42% | 3.46  | 0.44 | 129.9 | -11.1 |
|       |   | 3-6 | 32% | 68% |     | 1.82  | 1.03 | 68.1  |       |
|       |   | 6-9 | 45% | 55% |     | 0     | -    | 0.0   |       |
|       | 2 | 0-3 | 45% | 55% | 51% | 16.04 | 1.76 | 601.4 | 0.4   |
|       |   | 3-6 | 38% | 62% |     | 5.73  | 0.43 | 214.9 |       |
|       |   | 6-9 | 69% | 31% |     | 1.73  | 0.66 | 65.0  |       |
|       | 3 | 0-3 | 43% | 57% | 41% | 8.60  | 0.88 | 322.5 | -4.1  |
|       |   | 3-6 | 42% | 58% |     | 1.86  | 1.41 | 69.7  |       |
|       |   | 6-9 | 37% | 63% |     | 2.60  | 1.14 | 97.7  |       |
|       | 4 | 0-3 | 54% | 46% | 55% | 4.94  | 0.53 | 185.4 | -4.3  |
|       |   | 3-6 | 55% | 45% |     | 7.82  | 1.26 | 293.3 |       |
|       |   | 6-9 | 56% | 44% |     | 0.00  | -    | 0.0   |       |
|       | 5 | 0-3 | 54% | 46% | 46% | 6.44  | 1.20 | 241.7 | -3.8  |
|       |   | 3-6 | 57% | 43% |     | 3.82  | 0.43 | 143.2 |       |
|       |   | 6-9 | 34% | 66% |     | 3.24  | 0.39 | 121.6 |       |
|       | 6 | 0-3 | 43% | 57% | 40% | 8.82  | 1.53 | 330.8 | -5.2  |
|       |   | 3-6 | 40% | 60% |     | 0.00  | -    | 0.0   |       |
|       |   | 6-9 | 38% | 62% |     | 2.50  | n/a  | 93.8  |       |
|       | 7 | 0-3 | 42% | 58% | 47% | 12.26 | 1.31 | 459.7 | -0.5  |
|       |   | 3-6 | 49% | 51% |     | 2.22  | 0.40 | 83.3  |       |
|       |   | 6-9 | 49% | 51% |     | 6.35  | 1.01 | 238.2 |       |
|       | 8 | 0-3 | 54% | 46% | 50% | 12.55 | 0.82 | 470.7 | -0.2  |
|       |   | 3-6 | 53% | 47% |     | 6.41  | 1.64 | 240.3 |       |
|       |   | 6-9 | 44% | 56% |     | 2.62  | 0.92 | 98.3  |       |
| <hr/> |   |     |     |     |     |       |      |       |       |
| EPR3  | 1 | 0-3 | 39% | 61% | 38% | 0.00  | -    | 0.0   | -51.9 |
|       |   | 3-6 | 27% | 73% |     | 0.00  | -    | 0.0   |       |
|       |   | 6-9 | 50% | 50% |     | 0.00  | -    | 0.0   |       |
|       | 2 | 0-3 | 21% | 79% | 18% | 1.02  | 0.33 | 38.2  | -23.8 |
|       |   | 3-6 | 16% | 84% |     | 0.00  | -    | 0.0   |       |
|       |   | 6-9 | 11% | 89% |     | 0.00  | -    | 0.0   |       |
|       | 3 | 0-3 | 32% | 68% | 23% | 4.01  | 0.89 | 150.3 | -12.8 |
|       |   | 3-6 | 18% | 82% |     | 0.00  | -    | 0.0   |       |
|       |   | 6-9 | 14% | 86% |     | 0.00  | -    | 0.0   |       |
|       | 4 | 0-3 | 23% | 77% | 19% | 5.03  | 1.10 | 188.6 | -11.7 |
|       |   | 3-6 | 8%  | 92% |     | 0.00  | -    | 0.0   |       |
|       |   | 6-9 | 26% | 74% |     | 0.00  | -    | 0.0   |       |

**Supplementary material – Rock fragments, <sup>137</sup>Cs activities and inventories per soil samples,  
and soil erosion per soil profile**

|      |     |     |     |     |       |      |       |        |      |
|------|-----|-----|-----|-----|-------|------|-------|--------|------|
| 5    | 0-3 | 26% | 74% | 34% | 0.00  | -    | 0.0   | -19.0  |      |
|      | 3-6 | 50% | 50% |     | 0.00  | -    | 0.0   |        |      |
|      | 6-9 | 11% | 89% |     | 2.27  | 0.67 | 85.1  |        |      |
| 6    | 0-3 | 32% | 68% | 45% | 7.56  | 1.03 | 283.5 | -8.6   |      |
|      | 3-6 | 41% | 59% |     | 0.00  | -    | 0.0   |        |      |
|      | 6-9 | 57% | 43% |     | 0.00  | -    | 0.0   |        |      |
| 7    | 0-3 | 31% | 69% | 22% | 0.00  | -    | 0.0   | -51.85 |      |
|      | 3-6 | 3%  | 97% |     | 0.00  | -    | 0.0   |        |      |
|      | 6-9 | 27% | 73% |     | 0.00  | -    | 0.0   |        |      |
| 8    | 0-3 | 34% | 66% | 30% | 1.42  | 0.92 | 53.3  | -11.8  |      |
|      | 3-6 | 22% | 78% |     | 5.0   | 1.6  | 186.7 |        |      |
|      | 6-9 | 31% | 69% |     | 0.00  | -    | 0.0   |        |      |
| 9    | 0-3 | 24% | 76% | 27% | 0     | -    | 0.0   | -20.1  |      |
|      | 3-6 | 28% | 72% |     | 1.6   | 0.8  | 61.3  |        |      |
|      | 6-9 | 31% | 69% |     | 0     | -    | 0.0   |        |      |
| 10   | 0-3 | 37% | 63% | 30% | 11.91 | 0.73 | 446.7 | -4.7   |      |
|      | 3-6 | 29% | 71% |     | 0.12  | 0.23 | 4.7   |        |      |
|      | 6-9 | 21% | 79% |     | 0     | -    | 0.0   |        |      |
| 11   | 0-3 | 24% | 76% | 16% | 4.65  | 0.38 | 174.4 | -12.1  |      |
|      | 3-6 | 11% | 89% |     | 0.00  | -    | 0.0   |        |      |
|      | 6-9 | 12% | 88% |     | 0.00  | -    | 0.0   |        |      |
| 12   | 0-3 | 36% | 64% | 40% | 7.02  | 0.40 | 263.3 | -8.9   |      |
|      | 3-6 | 46% | 54% |     | 0.00  | -    | 0.0   |        |      |
|      | 6-9 | 37% | 63% |     | 0.00  | -    | 0.0   |        |      |
| 13   | 0-3 | 48% | 52% | 31% | 9.50  | 1.15 | 356.4 | -5.4   |      |
|      | 3-6 | 29% | 71% |     | 1.61  | 0.36 | 60.4  |        |      |
|      | 6-9 | 2%  | 98% |     | 0.00  | -    | 0.0   |        |      |
| 14   | 0-3 | 20% | 80% | 24% | 4.89  | 0.41 | 183.3 | -8.2   |      |
|      | 3-6 | 29% | 71% |     | 2.78  | 0.82 | 104.1 |        |      |
|      | 6-9 | 23% | 77% |     | 0     | -    | 0.0   |        |      |
| EPR2 | 1   | 0-3 | 38% | 62% | 41%   | 8.2  | 0.3   | 308.4  | -1.2 |
|      |     | 3-6 | 64% | 36% |       | 9.3  | 1.6   | 348.9  |      |
|      |     | 6-9 | 19% | 81% |       | 1.5  | 1.2   | 54.6   |      |
| 2    | 0-3 | 33% | 67% | 24% | 14.8  | 0.7  | 554.9 | -0.5   |      |
|      | 3-6 | 25% | 75% |     | 6.2   | 0.5  | 231.8 |        |      |
|      | 6-9 | 7%  | 93% |     | 0.0   | -    | 0.0   |        |      |
| 3    | 0-3 | 12% | 88% | 15% | 2.3   | 0.3  | 86.7  | -17.5  |      |
|      | 3-6 | 10% | 90% |     | 0.0   | -    | 0.0   |        |      |
|      | 6-9 | 30% | 70% |     | 0.0   | -    | 0.0   |        |      |
| 4    | 0-3 | 15% | 85% | 10% | 5.0   | 0.6  | 186.5 | -5.9   |      |
|      | 3-6 | 4%  | 96% |     | 5.3   | 0.4  | 199.9 |        |      |
|      | 6-9 | 6%  | 94% |     | 0.0   | -    | 0.0   |        |      |
| 5    | 0-3 | 40% | 60% | 33% | 4.2   | 0.8  | 156.3 | -12.9  |      |

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|   |     |     |     |     |     |     |       |       |
|---|-----|-----|-----|-----|-----|-----|-------|-------|
|   | 3-6 | 31% | 69% |     | 0.0 | -   | 0.0   |       |
|   | 6-9 | 20% | 80% |     | 0.0 | -   | 0.0   |       |
| 6 | 0-3 | 38% | 62% | 35% | 4.9 | 1.0 | 182.3 | -11.7 |
|   | 3-6 | 14% | 86% |     | 0.0 | -   | 0.0   |       |
|   | 6-9 | 49% | 51% |     | 0.0 | -   | 0.0   |       |
| 7 | 0-3 | 40% | 60% | 26% | 7.1 | 0.7 | 266.9 | -4.7  |
|   | 3-6 | 17% | 83% |     | 4.9 | 0.8 | 184.1 |       |
|   | 6-9 | 11% | 89% |     | 0.0 | -   | 0.0   |       |
| 8 | 0-3 | 31% | 69% | 27% | 6.0 | 0.6 | 225.9 | -10.1 |
|   | 3-6 | 21% | 79% |     | 0.0 | -   | 0.0   |       |
|   | 6-9 | 27% | 73% |     | 0.0 | -   | 0.0   |       |