**Table 1** description of the provided data which correspond to the Figures of the manuscript

| ID | Name | Description | Unit | Timeframe | Figure in manuscript |
|---|---|---|---|---|---|
| 1 | ./Current/QGIS_files/EU_budget_2030_min.tif | Agricultural management practice scenario that resulted in the lowest P balance for the target area defined by $P_{Available}$ > 22 mg P $kg^{-1}$. | [] | 2020-2029 | Figure 7.a |
| 2 | ./Current/QGIS_files/EU_budget_2050_min.tif | Agricultural management practice scenario that resulted in the lowest P balance for the target area defined by $P_{Available}$ > 22 mg P $kg^{-1}$. | [] | 2040-2049 | Figure 7.a |
| 3 | ./Current/QGIS_files/EU_erosion_2030_min.tif | Agricultural management practice scenario that resulted in the lowest P erosion for the target area defined by $P_{Available}$ > 22 mg P $kg^{-1}$. | [] | 2020-2029 | Figure 7.b |
| 4 | ./Current/QGIS_files/EU_erosion_2050_min.tif | Agricultural management practice scenario that resulted in the lowest P erosion for the target area defined by $P_{Available}$ > 22 mg P $kg^{-1}$. | [] | 2040-2049 | Figure 7.b |
| 5 | ./Current/QGIS_files/EU_export_2030_max.tif | Agricultural management practice scenario that resulted in the highest P export for the target area defined by $P_{Available}$ > 22 mg P $kg^{-1}$. | [] | 2020-2029 | Figure 7.c |
| 6 | ./Current/QGIS_files/EU_export_2050_max.tif | Agricultural management practice scenario that resulted in the highest P export for the target area defined by $P_{Available}$ > 22 mg P $kg^{-1}$. | [] | 2040-2049 | Figure 7.c |
| 7 | ./Current/QGIS_files/Pav_leach.tif | Target area of $P_{Available}$ > 40 mg P $kg^{-1}$, which is at higher risk of P leaching. | [] | 2010-2019 | Figure S12 |
| 8 | ./Current/QGIS_files/Pav_of_Ptot.tif | Ratio of $P_{Available}$ / $P_{Total}$ in the agricultural topsoil (0-30 cm) of the EU and UK. | [%] | 2010-2019 | Figure S2 |
| 9 | ./Current/QGIS_files/Pav_sufficient.tif | Target area of $P_{Available}$ > 22 mg P $kg^{-1}$, which is expected to supply enough P to the crops. | [] | 2010-2019 | Figure S11 |

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|---|---|---|---|---|---|
| 10 | ./Current/QGIS_files/Pavail_Olsen.tif | Average $P_{Available}$ pool (based on the Olsen method) in the agricultural topsoil (0–30 cm) of the EU and UK. | [kg $ha^{-1}$] | 2010-2019 | Figure 5.b |
| 11 | ./Current/QGIS_files/Pbudget.tif | Average P balance of EU and UK agricultural soils. | [kg $ha^{-1}$ $year^{-1}$] | 2010-2019 | Figure 4.a |
| 12 | ./Current/QGIS_files/Pbudget_highSorp.tif | Average P balance from running the model with a high maximum sorption capacity (1.5-times) and maximal sorption affinity. | [kg $ha^{-1}$ $year^{-1}$] | 2010-2019 | Figure 4.b |
| 13 | ./Current/QGIS_files/Pbudget_lowSorp.tif | Average P balance from running the model with a low maximum sorption capacity (0.5-times) and minimal sorption affinity. | [kg $ha^{-1}$ $year^{-1}$] | 2010-2019 | Figure 4.c |
| 14 | ./Current/QGIS_files/Perod.tif | Average P export of EU and UK agricultural soils by net P erosion. | [kg $ha^{-1}$ $year^{-1}$] | 2010-2019 | Figure 3.b |
| 15 | ./Current/QGIS_files/Pexport.tif | Average P export of EU and UK agricultural soils by crop harvest. | [kg $ha^{-1}$ $year^{-1}$] | 2010-2019 | Figure 3.a |
| 16 | ./Current/QGIS_files/Pin_mineral.tif | Average yearly P inputs to agricultural soils from mineral fertilizers application. | [kg $ha^{-1}$ $year^{-1}$] | 2010-2019 | Figure 2.b |
| 17 | ./Current/QGIS_files/Pin_organic.tif | Average yearly P inputs to agricultural soils from manure. | [kg $ha^{-1}$ $year^{-1}$] | 2010-2019 | Figure 2.a |
| 18 | ./Current/QGIS_files/Pinput.tif | Average yearly P inputs from mineral plus organic fertilizer application to agricultural soils. | [kg $ha^{-1}$ $year^{-1}$] | 2010-2019 | Figure S1 |
| 19 | ./Current/QGIS_files/Ptot.tif | Average $P_{Total}$ pool in the agricultural topsoil (0–30 cm) of the EU and UK. | [kg $ha^{-1}$] | 2010-2019 | Figure 5.a |
| 20 | ./Current/QGIS_files/high_eros.tif | Target area defined by regions with high P erosion (> 1 g P $kg^{-1}$). | [] | 2010-2019 | Figure S13 |