

**Figure S1.** Geographical data was used for hotspot analysis. 3-class suitability climatic Ecological Niche Models (*Ophraella communa – Ambrosia artemisiifolia*) and their occurrence localities (secondary ranges; triangles for *O. communa*, small dots for *A. artemisiifolia*) (a). Current annual mean for the Particulate Matter (PM2.5) (b). Current annual mean for Nitrogen dioxide (NO2) (c). Demographic data arranged through the Nomenclature of Territorial Units for Statistics (NUTS3) for 2018 (d).

**Table S1a.** Detailed list of the hotspots-NUTS3 values for the current scenario.

|  |  |
| --- | --- |
| **NUTS name** | **Average of GiZScore\_current** |
| Paris | 47.66100326 |
| Tower Hamlets | 36.88906112 |
| Lambeth | 31.69800952 |
| Westminster | 29.38286781 |
| Kensington & Chelsea and Hammersmith & Fulham | 29.36425864 |
| Hackney and Newham | 26.83981115 |
| Lewisham and Southwark | 24.10356583 |
| Haringey and Islington | 23.880745 |
| Wandsworth | 23.07288809 |
| Camden and City of London | 22.78779285 |
| Hauts-de-Seine | 17.66807267 |
| Bucure┼ƒti | 15.9132714 |
| Brent | 14.8871731 |
| Seine-Saint-Denis | 13.58237603 |
| Ealing | 12.95078407 |
| Arr. de Bruxelles-Capitale/Arr. Brussel-Hoofdstad | 12.46901367 |
| Redbridge and Waltham Forest | 12.46130333 |
| Portsmouth | 11.39586179 |
| Basel-Stadt | 11.31214264 |
| Bexley and Greenwich | 11.19599846 |
| Merton, Kingston upon Thames and Sutton | 10.62119206 |
| Manchester | 10.5910013 |
| M├╝nchen, Kreisfreie Stadt | 10.51776325 |
| Wien | 10.40924991 |
| Val-de-Marne | 10.18610637 |
| Southampton | 9.684105818 |
| Miasto Warszawa | 9.610749862 |
| Hounslow and Richmond upon Thames | 9.260172747 |
| Berlin | 9.054881718 |
| Croydon | 8.934871889 |
| Southend-on-Sea | 8.508433065 |
| Liverpool | 8.222251094 |
| Bristol, City of | 8.118156693 |
| Budapest | 7.94117334 |
| Byen K├©benhavn | 7.589768203 |
| Miasto Krak├│w | 7.161278185 |
| Miasto ┼ü├│d┼║ | 7.116801702 |
| Birmingham | 7.062293792 |
| Hlavn├¡ m─østo Praha | 6.994167396 |
| Kingston upon Hull, City of | 6.955250017 |
| Frankfurt am Main, Kreisfreie Stadt | 6.837507239 |
| Barnet | 6.758002511 |
| Enfield | 6.671533374 |
| Herne, Kreisfreie Stadt | 6.544413015 |
| Stuttgart, Stadtkreis | 6.519838065 |
| Sandwell | 6.472090668 |
| Leicester | 6.428395542 |
| Wolverhampton | 6.310637082 |
| Brighton and Hove | 6.303392114 |
| Harrow and Hillingdon | 6.275776798 |
| Luton | 6.273576085 |
| Coventry | 6.224364232 |
| Agglomeratie ÔÇÖs-Gravenhage | 6.115818947 |
| Offenbach am Main, Kreisfreie Stadt | 6.029648545 |
| N├╝rnberg, Kreisfreie Stadt | 5.981734853 |
| Nottingham | 5.799433293 |
| Miasto Wroc┼éaw | 5.794887078 |
| Blackpool | 5.734347298 |
| Barking & Dagenham and Havering | 5.574669782 |
| Plymouth | 5.49115258 |
| Oberhausen, Kreisfreie Stadt | 5.46284789 |
| K├Âln, Kreisfreie Stadt | 5.390873087 |
| Stoke-on-Trent | 5.296207071 |
| Katowicki | 5.26216455 |
| Dudley | 5.257706679 |
| Bochum, Kreisfreie Stadt | 5.240971633 |
| Essen, Kreisfreie Stadt | 5.05913398 |
| Gelsenkirchen, Kreisfreie Stadt | 4.990363675 |
| Walsall | 4.935689905 |
| Mannheim, Stadtkreis | 4.924005662 |
| Monza e della Brianza | 4.828906591 |
| Ludwigshafen am Rhein, Kreisfreie Stadt | 4.812744685 |
| Miasto Pozna┼ä | 4.791843146 |
| R─½ga | 4.765722441 |
| Mainz, Kreisfreie Stadt | 4.671805026 |
| Greater Manchester South West | 4.60646792 |
| Bonn, Kreisfreie Stadt | 4.512936382 |
| Greater Manchester South East | 4.455515755 |
| D├╝sseldorf, Kreisfreie Stadt | 4.355596278 |
| Bromley | 4.302537882 |
| Milano | 4.276633107 |
| F├╝rth, Kreisfreie Stadt | 4.250633028 |
| Hamburg | 4.217481706 |
| Dortmund, Kreisfreie Stadt | 4.190729442 |
| Kiel, Kreisfreie Stadt | 4.059567309 |
| Derby | 4.03251733 |
| Leverkusen, Kreisfreie Stadt | 3.924107617 |
| Duisburg, Kreisfreie Stadt | 3.917569413 |
| Napoli | 3.913552364 |
| Regensburg, Kreisfreie Stadt | 3.880078141 |
| Kassel, Kreisfreie Stadt | 3.837115683 |
| Augsburg, Kreisfreie Stadt | 3.814753057 |
| South Hampshire | 3.764016961 |
| Rosenheim, Kreisfreie Stadt | 3.631974589 |
| Greater Manchester North West | 3.493734854 |
| Wirral | 3.473297509 |
| Wuppertal, Kreisfreie Stadt | 3.456575719 |
| Bremen, Kreisfreie Stadt | 3.335605862 |
| Bournemouth, Christchurch and Poole | 3.322262724 |
| Karlsruhe, Stadtkreis | 3.261272951 |
| Tr├│jmiejski | 3.258705342 |
| Dresden, Kreisfreie Stadt | 3.233708947 |
| Leipzig, Kreisfreie Stadt | 3.224443301 |
| Halle (Saale), Kreisfreie Stadt | 3.22010946 |
| Belfast | 3.19813723 |
| Torbay | 3.178145064 |
| M├╝lheim an der Ruhr, Kreisfreie Stadt | 3.150765636 |
| Greater Manchester North East | 3.128030161 |
| Groot-Amsterdam | 3.105113463 |
| Oldenburg (Oldenburg), Kreisfreie Stadt | 3.082422861 |
| Solingen, Kreisfreie Stadt | 3.066688554 |
| W├╝rzburg, Kreisfreie Stadt | 3.035526975 |
| Flensburg, Kreisfreie Stadt | 3.005089005 |
| Sunderland | 2.990936957 |
| Tyneside | 2.976117284 |
| Schweinfurt, Kreisfreie Stadt | 2.96400394 |
| Agglomeratie Haarlem | 2.924886889 |
| Oslo | 2.908999451 |
| Erlangen, Kreisfreie Stadt | 2.877519452 |
| Sefton | 2.834646134 |
| Delft en Westland | 2.810777084 |
| Wiesbaden, Kreisfreie Stadt | 2.762057747 |
| K├©benhavns omegn | 2.748664721 |
| Osnabr├╝ck, Kreisfreie Stadt | 2.723561197 |
| Heilbronn, Stadtkreis | 2.711845139 |
| Medway | 2.698353801 |
| East Merseyside | 2.677219474 |
| Darmstadt, Kreisfreie Stadt | 2.63042038 |
| Glasgow City | 2.622255729 |
| Heidelberg, Stadtkreis | 2.621697919 |
| Agglomeratie Leiden en Bollenstreek | 2.618734106 |
| Zaanstreek | 2.568206506 |
| Miasto Szczecin | 2.557785831 |
| Speyer, Kreisfreie Stadt | 2.528394711 |
| Edinburgh, City of | 2.490374615 |
| Bielefeld, Kreisfreie Stadt | 2.471482483 |
| Gen├¿ve | 2.464504551 |
| Bamberg, Kreisfreie Stadt | 2.457546652 |
| Remscheid, Kreisfreie Stadt | 2.454864418 |
| Rostock, Kreisfreie Stadt | 2.419660247 |
| Pforzheim, Stadtkreis | 2.411501117 |
| Bottrop, Kreisfreie Stadt | 2.400854056 |
| Krefeld, Kreisfreie Stadt | 2.381527946 |
| Blackburn with Darwen | 2.353763481 |
| Delmenhorst, Kreisfreie Stadt | 2.348232344 |
| Frankenthal (Pfalz), Kreisfreie Stadt | 2.324970839 |
| Bradford | 2.324067679 |
| Sheffield | 2.278306869 |
| Leeds | 2.242935023 |
| Kempten (Allg├ñu), Kreisfreie Stadt | 2.238213903 |
| Hagen, Kreisfreie Stadt | 2.207803918 |
| ðíð¥Ðäð©ÐÅ (ÐüÐéð¥ð╗ð©Ðåð░) | 2.193780599 |
| Freiburg im Breisgau, Stadtkreis | 2.18892872 |
| Aschaffenburg, Kreisfreie Stadt | 2.164273917 |
| Braunschweig, Kreisfreie Stadt | 2.156591403 |
| Main-Taunus-Kreis | 2.145085034 |
| IJmond | 2.132962341 |
| Dublin | 2.129840341 |
| M├Ânchengladbach, Kreisfreie Stadt | 2.111733703 |
| Grad Zagreb | 2.10848092 |
| Chemnitz, Kreisfreie Stadt | 2.1019046 |
| Ingolstadt, Kreisfreie Stadt | 2.095762621 |
| Arr. Antwerpen | 2.084164408 |
| Kaufbeuren, Kreisfreie Stadt | 2.077111419 |
| Bremerhaven, Kreisfreie Stadt | 2.051716392 |
| Essex Thames Gateway | 2.036134917 |
| Mettmann | 2.028991044 |
| Koblenz, Kreisfreie Stadt | 2.027077432 |
| Magdeburg, Kreisfreie Stadt | 2.016291676 |
| Thurrock | 2.010961536 |
| Schwabach, Kreisfreie Stadt | 2.008756915 |
| Ulm, Stadtkreis | 1.997775177 |
| Warrington | 1.98331108 |
| Solihull | 1.974739448 |
| Landshut, Kreisfreie Stadt | 1.970849582 |
| Neum├╝nster, Kreisfreie Stadt | 1.949748332 |
| Bayreuth, Kreisfreie Stadt | 1.93679078 |
| M├╝nster, Kreisfreie Stadt | 1.932254901 |
| Trieste | 1.931618714 |
| Offenbach, Landkreis | 1.912342106 |
| Groot-Rijnmond | 1.888959634 |
| Cardiff and Vale of Glamorgan | 1.888603606 |
| ├ürea Metropolitana do Porto | 1.887057304 |
| Trier, Kreisfreie Stadt | 1.871144128 |
| Z├╝rich | 1.868730588 |
| Ludwigsburg | 1.822816295 |
| ├ürea Metropolitana de Lisboa | 1.818194953 |
| West Surrey | 1.812543372 |
| Wakefield | 1.805729482 |
| Recklinghausen | 1.798040029 |
| Calderdale and Kirklees | 1.795692534 |
| L├╝beck, Kreisfreie Stadt | 1.782463193 |
| Varese | 1.779089353 |
| Potsdam, Kreisfreie Stadt | 1.775642027 |
| Ennepe-Ruhr-Kreis | 1.770664694 |
| Val-dÔÇÖOise | 1.767962387 |
| Erfurt, Kreisfreie Stadt | 1.758239049 |
| Barcelona | 1.757156685 |
| Esslingen | 1.751872416 |
| Het Gooi en Vechtstreek | 1.733742604 |
| Madrid | 1.728579628 |
| Roma | 1.716885689 |
| Milton Keynes | 1.694219051 |
| Swindon | 1.689621686 |
| Arr. Kortrijk | 1.676364542 |
| Hamm, Kreisfreie Stadt | 1.670000972 |
| Alkmaar en omgeving | 1.666872078 |
| Utrecht | 1.666182805 |

**Table S1b.** Detailed list of the hotspots-NUTS3 values for the future scenario.

|  |  |
| --- | --- |
| **NUTS name** | **Average of GiZScore\_2050** |
| Paris | 53.07171039 |
| Tower Hamlets | 36.92340572 |
| Haringey and Islington | 30.95325894 |
| Westminster | 29.74127357 |
| Kensington & Chelsea and Hammersmith & Fulham | 29.30987919 |
| Hackney and Newham | 29.15596039 |
| Camden and City of London | 28.28110067 |
| Lambeth | 27.38316328 |
| Wandsworth | 22.99799827 |
| Lewisham and Southwark | 21.45959471 |
| Ealing | 18.76363146 |
| Brent | 18.41946262 |
| Hauts-de-Seine | 18.22335645 |
| Seine-Saint-Denis | 16.25199997 |
| Arr. de Bruxelles-Capitale/Arr. Brussel-Hoofdstad | 16.21230171 |
| M├╝nchen, Kreisfreie Stadt | 15.80180704 |
| Redbridge and Waltham Forest | 14.53351544 |
| Southampton | 13.82462527 |
| Bexley and Greenwich | 13.50219178 |
| Merton, Kingston upon Thames and Sutton | 13.2660459 |
| Manchester | 12.68851698 |
| Hounslow and Richmond upon Thames | 12.09686824 |
| Southend-on-Sea | 11.96061851 |
| Portsmouth | 11.94702724 |
| Glasgow City | 11.89404388 |
| Byen K├©benhavn | 11.80578583 |
| Luton | 11.76885297 |
| Liverpool | 11.48931594 |
| Bristol, City of | 11.41306747 |
| Val-de-Marne | 11.32624454 |
| Miasto Warszawa | 11.1476009 |
| Croydon | 11.12085486 |
| Barnet | 11.03074179 |
| Agglomeratie ÔÇÖs-Gravenhage | 10.70503738 |
| Wolverhampton | 10.33146833 |
| Birmingham | 10.3180421 |
| Enfield | 10.13166254 |
| Wien | 10.09503006 |
| Bucure┼ƒti | 10.0474998 |
| Kingston upon Hull, City of | 10.01652962 |
| Coventry | 9.849388879 |
| Hlavn├¡ m─østo Praha | 9.82699796 |
| Brighton and Hove | 9.568096721 |
| Sandwell | 9.564931507 |
| Dudley | 8.904733429 |
| Blackpool | 8.882510438 |
| Berlin | 8.768543867 |
| Barking & Dagenham and Havering | 8.589882144 |
| Basel-Stadt | 8.453537298 |
| Plymouth | 8.361199395 |
| Stoke-on-Trent | 7.746160357 |
| Leicester | 7.66419547 |
| Miasto Krak├│w | 7.311305821 |
| Nottingham | 6.896500319 |
| Harrow and Hillingdon | 6.79268471 |
| Stuttgart, Stadtkreis | 6.766332531 |
| Miasto Wroc┼éaw | 6.631943208 |
| Greater Manchester South West | 6.566881366 |
| Budapest | 6.539534758 |
| Greater Manchester South East | 6.438405342 |
| Belfast | 6.293493789 |
| Hamburg | 6.277381556 |
| Kiel, Kreisfreie Stadt | 6.254817815 |
| Augsburg, Kreisfreie Stadt | 6.020138089 |
| Walsall | 5.873074787 |
| Bromley | 5.861388962 |
| Miasto | 5.794059613 |
| Oslo | 5.663203838 |
| Derby | 5.606832219 |
| Greater Manchester North West | 5.462975163 |
| Frankfurt am Main, Kreisfreie Stadt | 5.393447426 |
| Torbay | 5.351823068 |
| Miasto Pozna┼ä | 5.236750772 |
| Offenbach am Main, Kreisfreie Stadt | 5.228992507 |
| D├╝sseldorf, Kreisfreie Stadt | 5.19447183 |
| Riga | 5.190523782 |
| Bournemouth, Christchurch and Poole | 5.186085496 |
| Rosenheim, Kreisfreie Stadt | 5.184953594 |
| Agglomeratie Haarlem | 5.183771584 |
| Leipzig, Kreisfreie Stadt | 5.107935819 |
| Wirral | 4.944033921 |
| Herne, Kreisfreie Stadt | 4.940184293 |
| N├╝rnberg, Kreisfreie Stadt | 4.905254241 |
| Dublin | 4.84787338 |
| Tyneside | 4.810760656 |
| Groot-Amsterdam | 4.79981496 |
| Essen, Kreisfreie Stadt | 4.786428619 |
| South Hampshire | 4.721515138 |
| Milano | 4.671995434 |
| Sunderland | 4.655037149 |
| Wuppertal, Kreisfreie Stadt | 4.60743953 |
| Delft en Westland | 4.5991003 |
| Dresden, Kreisfreie Stadt | 4.585146636 |
| Edinburgh, City of | 4.578461576 |
| Halle (Saale), Kreisfreie Stadt | 4.539761061 |
| Mainz, Kreisfreie Stadt | 4.494493881 |
| Napoli | 4.493996007 |
| Greater Manchester North East | 4.483131309 |
| Tr├│jmiejski | 4.459501647 |
| Oberhausen, Kreisfreie Stadt | 4.442178118 |
| Gelsenkirchen, Kreisfreie Stadt | 4.43517155 |
| Agglomeratie Leiden en Bollenstreek | 4.398356833 |
| Sefton | 4.346697946 |
| Flensburg, Kreisfreie Stadt | 4.320331509 |
| East Merseyside | 4.319246122 |
| Bradford | 4.304783157 |
| K├Âln, Kreisfreie Stadt | 4.273999854 |
| Bochum, Kreisfreie Stadt | 4.147117874 |
| Karlsruhe, Stadtkreis | 4.10212546 |
| Monza e della Brianza | 4.09660108 |
| K├©benhavns omegn | 4.094534266 |
| Neum├╝nster, Kreisfreie Stadt | 4.081529409 |
| Medway | 3.954599924 |
| Katowicki | 3.942509817 |
| Regensburg, Kreisfreie Stadt | 3.908965432 |
| Gen├¿ve | 3.872871186 |
| Bremen, Kreisfreie Stadt | 3.869292431 |
| Zaanstreek | 3.853809173 |
| Leeds | 3.839343302 |
| Duisburg, Kreisfreie Stadt | 3.70146061 |
| Bonn, Kreisfreie Stadt | 3.700870711 |
| Mannheim, Stadtkreis | 3.676766075 |
| Ludwigshafen am Rhein, Kreisfreie Stadt | 3.670007247 |
| Freiburg im Breisgau, Stadtkreis | 3.651752358 |
| Kassel, Kreisfreie Stadt | 3.525763101 |
| F├╝rth, Kreisfreie Stadt | 3.508704494 |
| Dortmund, Kreisfreie Stadt | 3.508106484 |
| Oldenburg (Oldenburg), Kreisfreie Stadt | 3.447421432 |
| Blackburn with Darwen | 3.404682553 |
| Miasto Szczecin | 3.395713771 |
| Solihull | 3.324963067 |
| IJmond | 3.268240049 |
| Bremerhaven, Kreisfreie Stadt | 3.231729013 |
| Osnabr├╝ck, Kreisfreie Stadt | 3.22062054 |
| M├╝lheim an der Ruhr, Kreisfreie Stadt | 3.168314173 |
| Remscheid, Kreisfreie Stadt | 3.136725871 |
| Leverkusen, Kreisfreie Stadt | 3.124580598 |
| Warrington | 3.112349601 |
| Sheffield | 3.10273242 |
| Z├╝rich | 3.098784763 |
| Landshut, Kreisfreie Stadt | 3.052458507 |
| Essex Thames Gateway | 3.041582655 |
| Ingolstadt, Kreisfreie Stadt | 3.039365394 |
| Wiesbaden, Kreisfreie Stadt | 3.001146191 |
| Cardiff and Vale of Glamorgan | 3.000892219 |
| Kaufbeuren, Kreisfreie Stadt | 2.904715272 |
| Ulm, Stadtkreis | 2.898930593 |
| Magdeburg, Kreisfreie Stadt | 2.898922485 |
| Kempten (Allg├ñu), Kreisfreie Stadt | 2.886006438 |
| Heidelberg, Stadtkreis | 2.885561787 |
| Trier, Kreisfreie Stadt | 2.884223163 |
| Bielefeld, Kreisfreie Stadt | 2.86023379 |
| Thurrock | 2.855124826 |
| ├ürea Metropolitana de Lisboa | 2.780747934 |
| Groot-Rijnmond | 2.772263371 |
| Utrecht | 2.688909854 |
| Wakefield | 2.68507144 |
| Het Gooi en Vechtstreek | 2.655527012 |
| Chemnitz, Kreisfreie Stadt | 2.600525717 |
| Braunschweig, Kreisfreie Stadt | 2.569763946 |
| Rostock, Kreisfreie Stadt | 2.568226958 |
| Grad Zagreb | 2.543953095 |
| Erlangen, Kreisfreie Stadt | 2.538539205 |
| Bayreuth, Kreisfreie Stadt | 2.53202012 |
| Solingen, Kreisfreie Stadt | 2.513715421 |
| M├Ânchengladbach, Kreisfreie Stadt | 2.421389209 |
| Krefeld, Kreisfreie Stadt | 2.41999114 |
| Hagen, Kreisfreie Stadt | 2.367814064 |
| L├╝beck, Kreisfreie Stadt | 2.320985227 |
| Schweinfurt, Kreisfreie Stadt | 2.302963431 |
| Calderdale and Kirklees | 2.282257005 |
| Esslingen | 2.266579361 |
| Trieste | 2.254777057 |
| Swindon | 2.249744507 |
| Bamberg, Kreisfreie Stadt | 2.220721995 |
| W├╝rzburg, Kreisfreie Stadt | 2.214498678 |
| Madrid | 2.212261395 |
| Jena, Kreisfreie Stadt | 2.212068023 |
| North Lanarkshire | 2.192103589 |
| Pforzheim, Stadtkreis | 2.175836944 |
| Hartlepool and Stockton-on-Tees | 2.160852808 |
| Koblenz, Kreisfreie Stadt | 2.153185138 |
| Darmstadt, Kreisfreie Stadt | 2.127113783 |
| Zuidoost-Zuid-Holland | 2.108854668 |
| Varese | 2.090315346 |
| Arr. Antwerpen | 2.052479401 |
| Arr. Kortrijk | 2.052269352 |
| Bottrop, Kreisfreie Stadt | 2.047818826 |
| Heilbronn, Stadtkreis | 2.04631582 |
| Delmenhorst, Kreisfreie Stadt | 2.042168019 |
| Milton Keynes | 2.039685828 |
| West Surrey | 2.018089037 |
| South Teesside | 1.999303929 |
| Val-dÔÇÖOise | 1.969425514 |
| Alkmaar en omgeving | 1.969343045 |
| Zuid-Limburg | 1.969285756 |
| M├╝nster, Kreisfreie Stadt | 1.954262949 |
| Gwent Valleys | 1.936558131 |
| Swansea | 1.916763426 |
| Roma | 1.913048634 |
| Speyer, Kreisfreie Stadt | 1.903667076 |
| Oost-Zuid-Holland | 1.898766642 |
| Barcelona | 1.898516 |
| York | 1.894192437 |
| Erfurt, Kreisfreie Stadt | 1.886344405 |
| ├ürea Metropolitana do Porto | 1.880962592 |
| Arnhem/Nijmegen | 1.879842698 |
| East Lancashire | 1.874404886 |
| Mettmann | 1.871542246 |
| Zug | 1.867405658 |
| Aschaffenburg, Kreisfreie Stadt | 1.851965424 |
| Amberg, Kreisfreie Stadt | 1.850569789 |
| Barnsley, Doncaster and Rotherham | 1.845602915 |
| Central Valleys | 1.844776073 |
| Coburg, Kreisfreie Stadt | 1.84286838 |
| Berkshire | 1.834396366 |
| Arr. Li├¿ge | 1.820472858 |
| Passau, Kreisfreie Stadt | 1.815750732 |
| Inverclyde, East Renfrewshire and Renfrewshire | 1.792061101 |
| Hertfordshire | 1.789733711 |
| Ennepe-Ruhr-Kreis | 1.781683264 |
| St├ñdteregion Aachen | 1.777008009 |
| Arr. Gent | 1.764040473 |
| Kent Thames Gateway | 1.762664196 |
| Main-Taunus-Kreis | 1.750384868 |
| B├Âblingen | 1.740946665 |
| Frankenthal (Pfalz), Kreisfreie Stadt | 1.738279462 |
| Schwerin, Kreisfreie Stadt | 1.732255599 |
| Aargau | 1.717756271 |
| Gro├ƒ-Gerau | 1.699472802 |
| East Surrey | 1.6834898 |
| Weimar, Kreisfreie Stadt | 1.666083541 |
| Memmingen, Kreisfreie Stadt | 1.663449744 |
| Weiden i. d. Opf, Kreisfreie Stadt | 1.660997934 |
| Offenbach, Landkreis | 1.651021438 |

**Table S2.** Variation in the number of hotspots (the ones with the three highest confidence intervals, *p* = 90%, 95%, and 99%) for each country.

|  |  |
| --- | --- |
| **Country code** | **Number of hotspots change (%)** |
| NL | 7.95 |
| PT | 3.66 |
| CH | 3.47 |
| UK | 3.15 |
| ES | 1.37 |
| IE | 0.70 |
| HR | 0.27 |
| IT | 0.07 |
| NO | 0.06 |
| DE | 0.04 |
| PL | 0.03 |
| FR | 0.03 |
| DK | 0.00 |
| RO | 0.00 |
| HU | 0.00 |
| AT | 0.00 |
| CZ | 0.00 |
| EL | 0.00 |
| LV | 0.00 |
| BG | -0.07 |
| BE | -0.58 |

**Table S3.** Outcomes of the Mann-Whitney U test performed, for each country, between current and future hotspots’ z-values.

|  |  |  |
| --- | --- | --- |
| **Mann-Whitney U test** | | |
| **U** | ***p*-value** | **Country code (NUTS)** |
| 15120589 | 0 | AL |
| 42822765 | 0 | AT |
| 4681146 | 5.39E-30 | BE |
| 34380489 | 0 | BG |
| 23176891 | 0 | CH |
| 19345036 | 0 | CZ |
| 7.43E+08 | 0 | DE |
| 1247819 | 1.59E-302 | DK |
| 577830.5 | 3.16E-242 | EE |
| 44751593 | 0 | EL |
| 2.51E+08 | 0 | ES |
| 11716314 | 0 | FI |
| 3.35E+08 | 0 | FR |
| 7848772 | 5.40E-182 | HR |
| 19111308 | 4.98E-09 | HU |
| 910780.5 | 0 | IE |
| 22755 | 1.35E-181 | IS |
| 5.06E+08 | 0 | IT |
| 186 | 2.35E-19 | LI |
| 833909 | 1.01E-143 | LT |
| 154 | 4.37E-167 | LU |
| 106978.5 | 2.97E-112 | LV |
| 2265318 | 2.44E-57 | ME |
| 8953441 | 0 | MK |
| 1775399 | 7.50E-12 | NL |
| 752348.5 | 0 | NO |
| 3.77E+08 | 0 | PL |
| 16429236 | 5.66E-204 | PT |
| 2.71E+08 | 9.24E-243 | RO |
| 57281574 | 0 | RS |
| 24547583 | 0 | SE |
| 3267725 | 2.88E-247 | SI |
| 12741557 | 0 | SK |
| 725 | 2.13E-06 | TR |
| 3.1E+08 | 0 | UK |