**Online data supplement**

**1. Financial support of the individual centres**

**Financial support for ECRHS I:** The following grants helped to fund the local studies.

**Belgium**: Belgian Science Policy Office, National Fund for Scientific Research, **Estonia:** Estonian Science Foundation, grant no 1088, **France:** Ministère de la Santé, Glaxo France, Insitut Pneumologique d'Aquitaine, Contrat de Plan Etat-Région Languedoc-Rousillon, CNMATS, CNMRT (90MR/10, 91AF/6), Ministre delegué de la santé, RNSP, France; GSF, **Germany**: Bundesministerium für Forschung und Technologie, **Norway:** Norwegian Research Council project no. 101422/310; **Spain:** Fondo de Investigación Sanitaria ( #91/0016-060-05/E, 92/0319 and #93/0393), Hospital General de Albacete, Hospital General Juan Ramón Jiménez, Dirección Regional de Salud Pública (Consejería de Sanidad del Principado de Asturias), CIRIT (1997 SGR 00079) and Servicio Andaluz de Salud; **Sweden:** The Swedish Medical Research Council, the Swedish Heart Lung Foundation, the Swedish Association against Asthma and Allergy; **UK:** National Asthma Campaign, British Lung Foundation, Department of Health, South Thames Regional Health Authority**.**

**Financial Support for ECRHS II**

**Belgium:** Antwerp: Fund for Scientific Research (grantcode, G.0402.00), University of Antwerp, Flemish Health Ministry**;** **Estonia: Tartu** Estonian Science Foundation grant no 4350, **France: (All)** Programme Hospitalier de Recherche Clinique—Direction de la Recherche Clinique (DRC) de Grenoble 2000 number 2610, Ministry of Health, Ministère de l’Emploi et de la Solidarité, Direction Génerale de la Santé, Centre Hospitalier Universitaire (CHU) de Grenoble, **Bordeaux**: Institut Pneumologique d’Aquitaine; **Grenoble:** Comite des Maladies Respiratoires de l’Isere **Montpellier:** Aventis ( France), Direction Regionale des Affaires Sanitaires et Sociales Languedoc-Roussillon**; Paris:** Union Chimique Belge- Pharma (France),Aventis (France), Glaxo France, **Germany: Erfurt** GSF—National Research Centre for Environment and Health, Deutsche Forschungsgemeinschaft(grant code, FR1526/1-1) **Hamburg:** GSF—National Research Centre for Environmentand Health, Deutsche Forschungsgemeinschaft (grant code, MA 711/4-1) **Iceland: Reykjavik**, Icelandic Research Council, Icelandic University Hospital Fund; **Norway: Bergen:** Norwegian Research Council, Norwegian Asthma and Allergy Association, Glaxo Wellcome AS, NorwayResearch Fund; **Spain:** Fondo de Investigacion Santarias (grant codes, 97/0035-01,99/0034-01 and 99/0034 02), HospitalUniversitario de Albacete, Consejeria deSanidad; **Barcelona:** Sociedad Espanola de Neumologı´a y Cirugı´a Toracica, Public Health Service(grant code, R01 HL62633-01), Fondo de Investigaciones Santarias (grant codes, 97/0035-01, 99/0034-01, and 99/0034-02), Consell Interdepartamentalde Recerca i Innovacio´ Tecnolo`gica (grant code, 1999SGR 00241) Instituto de Salud Carlos III; Red deCentros de Epidemiologı´a y Salud Pu´blica, C03/09,Redde Basesmoleculares y fisiolo´gicas de lasEnfermedadesRespiratorias,C03/011and Red de Grupos Infancia y Medio Ambiente G03/176; **Huelva:** Fondo de Investigaciones Santarias (grant codes, 97/0035-01, 99/0034-01, and 99/0034-02); **Galdakao:** Basque Health Department **Oviedo:** Fondo de Investigaciones Sanitaria (97/0035-02, 97/0035, 99/0034-01, 99/0034-02, 99/0034-04, 99/0034-06, 99/350, 99/0034--07), European Commission (EU-PEAL PL01237), Generalitat de Catalunya (CIRIT 1999 SGR 00214), Hospital Universitario de Albacete,Sociedad Española de Neumología y Cirugía Torácica (SEPAR R01 HL62633-01) Red de Centros de Epidemiología y Salud Pública (C03/09), Red de Bases moleculares y fisiológicas de las Enfermedades Respiratorias (C03/011) and Red de Grupos Infancia y Medio Ambiente (G03/176);97/0035-01, 99/0034-01, and99/0034-02); **Sweden: Göteborg , Umea, Uppsala**: Swedish Heart Lung Foundation, Swedish Foundation for Health Care Sciences and Allergy Research, Swedish Asthma and Allergy Foundation, Swedish Cancer and Allergy Foundation, Swedish Council for Working Life and Social Research (FAS), **UK: Ipswich and Norwich**: Asthma UK (formerly known as National Asthma Campaign).

**Financial Support for ECRHS** III

**Belgium: Antwerp South, Antwerp City:** Research Foundation Flanders(FWO), grant code G.0.410.08.N.10 (both sites), **Estonia: Tartu-** SF0180060s09 from the Estonian Ministry of Education. **France:** (**All**) Ministère de la Santé. Programme Hospitalier de Recherche Clinique (PHRC) national 2010. **Bordeaux:** INSERM U897 Université Bordeaux segalen, **Grenoble:** Comite Scientifique AGIRadom 2011. **Paris:** Agence Nationale de la Santé, Région Ile de France, domaine d’intérêt majeur (DIM) **Germany : Erfurt:** German Research Foundation HE 3294/10-1 **Hamburg**: German Research Foundation MA 711/6-1, NO 262/7-1 **Iceland:** Reykjavik, The Landspitali University Hospital Research Fund, University of Iceland Research Fund, ResMed Foundation, California, USA, Orkuveita Reykjavikur (Geothermal plant), Vegagerðin (The Icelandic Road Administration (ICERA). **Norway:** Norwegian Research council grant no 214123, Western Norway Regional Health Authorities grant no 911631, Bergen Medical Research Foundation.  **Spain:** Fondo de Investigación Sanitaria (PS09/02457, PS09/00716 09/01511) PS09/02185 PS09/03190), Servicio Andaluz de Salud , Sociedad Española de Neumología y Cirurgía Torácica (SEPAR 1001/2010); **Sweden:** All centres were funded by The Swedish Heart and Lung Foundation, The Swedish Asthma and Allergy Association, The Swedish Association against Lung and Heart Disease.Fondo de Investigación Sanitaria (PS09/02457 **Barcelona:**Fondo de Investigación Sanitaria (FIS PS09/00716) **Galdakao:** Fondo de Investigación Sanitaria (FIS 09/01511) **Huelva**: Fondo de Investigación Sanitaria (FIS PS09/02185) and Servicio Andaluz de Salud **Oviedo:** Fondo de Investigación Sanitaria (FIS PS09/03190) **Sweden:** All centres were funded by The Swedish Heart and Lung Foundation, The Swedish Asthma and Allergy Association, The Swedish Association against Lung and Heart Disease. **Swedish Research Council for health, working life and welfare (FORTE) Göteborg** **:** Also received further funding from the Swedish Council for Working life and Social Research. Umea also received funding from Vasterbotten Country Council ALF grant. **UK:** Medical Research Council (Grant Number 92091). Support also provided by the National Institute for Health Research through the Primary Care Research Network.

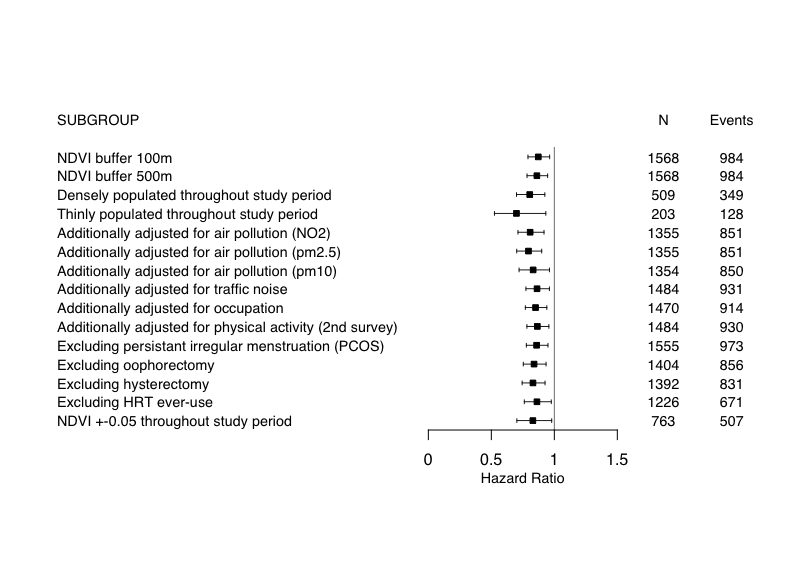
**2. Supplementary figures**

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Supplementary figure 1. Boxplot of NDVI by study centre, arranged by geographical latitude from north to south; The median NDVI is displayed as horizontal lines within the boxes. The lower and upper hinges correspond to the 25th and 75th percentile. The upper and lower whiskers extend from the hinge to the largest, respectively smallest value, yet no further than 1.5 interquartile ranges. Data beyond the end of the whiskers are plotted individually.

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**Supplementary figure 2.** Locally weighted estimate smooth of the NDVI against the Martingale residuals of the null cox proportional hazards model



Supplementary figure 3. Results of the sensitivity analyses

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Supplementary figure 4. Results of the stratified analysis

**3. Supplementary table**

Supplementary table 1. Details on Landsat 4-5 TM satellite images used for NDVI calculations

|  |  |  |  |
| --- | --- | --- | --- |
| **Centre** | **Landsat 4-5 TM satellite images used**  **(date, path/row)** | **Centre** | **Landsat 4-5 TM satellite images used**  **(date, path/row)** |
| Reykjavik | ECRHS1: 31.08.90, 221/15 | Gothenburg | ECRHS1: 05.07.89, 195/20 |
|  | ECRHS2: 15.08.98, 220/15 |  | 05.07.89, 195/19 |
|  | ECRHS3: 19.07.06, 220/15 |  | 03.07.89, 197/19 |
| Umea | ECRHS1: 21.06.89, 193/15 |  | ECRHS2: 07.06.02, 195/20 |
|  | 21.06.89, 193/16 |  | 07.06.02, 195/19 |
|  | 14.06.89, 192/15 |  | 14.06.02, 196/19 |
|  | 14.06.89, 192/16 |  | ECRHS3: 26.06.09, 195/20 |
|  | 14.06.89, 192/14 |  | 26.06.09, 195/19 |
|  | 15.07.90, 196/15 |  | 03.07.09, 196/19 |
|  | 15.07.90, 196/16 | Norwich | ECRHS1: 11.07.90, 200/23 |
|  | 15.07.90, 196/14 |  | ECRHS2: 16.05.02, 201/23 |
|  | 19.06.89, 195/15 |  | ECRHS3: 26.06.11, 201/23 |
|  | 19.06.89, 195/14 | Ipswich | ECRHS1: 11.07.90, 200/24 |
|  | 19.06.89, 195/16 |  | ECRHS2: 16.05.02, 201/24 |
|  | ECRHS2: 30.07.03, 193/15 |  | ECRHS3: 05.07.11, 200/24 |
|  | 30.07.03, 193/16 |  | 26.06.11, 201/24 |
|  | 19.07.03, 196/15 | Antwerp city | ECRHS1: 13.07.90, 198/24 |
|  | 23.07.04, 194/15 |  | 13.07.90, 198/25 |
|  | 23.07.04, 194/16 |  | 20.07.90, 199/24 |
|  | ECRHS3: 28.06.09, 193/14 |  | 14.07.90, 197/25 |
|  | 28.06.09, 193/15 |  | ECRHS2: 19.09.03, 198/24 |
|  | 28.06.09, 193/16 |  | 19.09.03, 198/25 |
|  | 26.06.09, 195/14 |  | ECRHS3: 06.09.10, 198/24 |
|  | 26.06.09, 195/15 |  | 06.09.10, 198/25 |
|  | 26.06.09, 195/16 | South Antwerp | ECRHS1: 13.07.90, 198/24 |
|  | 24.06.09, 197/14 |  | 13.07.90, 198/25 |
|  | 24.06.09, 197/15 |  | 20.07.90, 199/24 |
| Bergen | ECRHS1: 27.07.90, 200/18 |  | 14.07.90, 197/25 |
|  | 27.07.90, 200/19 |  | ECRHS2: 19.09.03, 198/24 |
|  | 27.07.90, 200/17 |  | 19.09.03, 198/25 |
|  | 27.07.90, 200/16 |  | ECRHS3: 06.09.10, 198/24 |
|  | 27.07.90, 200/15 |  | 06.09.10, 198/25 |
|  | 25.07.90, 202/17 | Erfurt | ECRHS1: 30.07.92, 194/24 |
|  | 25.07.90, 202/16 |  | 30.07.92, 194/25 |
|  | 25.07.90, 202/18 |  | ECRHS2: 06.08.03, 194/24 |
|  | ECRHS2: 06.07.03, 201/17 |  | 06.08.03, 194/25 |
|  | 06.07.03, 201/18 |  | ECRHS3: 08.07.10, 194/24 |
|  | 15.07.03, 200/19 |  | 08.07.10, 194/25 |
|  | 15.07.03, 200/16 | Paris | ECRHS1: 09.05.87, 199/26 |
|  | ECRHS3: 27.09.10, 201/18 |  | ECRHS2: 09.08.03, 199/26 |
|  | 27.09.10, 201/17 |  | ECRHS3: 16.07.06, 199/26 |
|  | 27.09.10, 201/16 | Grenoble | ECRHS1: 01.07.85, 196/29 |
|  | 27.09.10, 201/19 |  | 01.07.85, 196/28 |
|  | 04.09.10, 200/19 |  | ECRHS2: 14.06.02, 196/29 |
|  | 29.09.10, 199/15 |  | 14.06.02, 196/28 |
|  | 29.09.10, 199/16 |  | ECRHS3: 09.06.06, 196/29 |
|  | 29.09.10, 199/17 |  | 09.06.06, 196/28 |
|  | 29.09.10, 199/18 | Oviedo | ECRHS1: NA |
| Uppsala | ECRHS1: 07.07.89, 193/18 |  | ECRHS2: 05.08.03, 203/30 |
|  | 23.06.89, 191/18 |  | ECRHS3: 24.06.11, 203/30 |
|  | 23.06.89, 191/19 | Galdakao | ECRHS1: NA |
|  | 23.07.90, 193/19 |  | ECRHS2: 07.08.03, 201/30 |
|  | ECRHS2: 11.09.04, 192/18 |  | ECRHS3: 26.06.11, 201/30 |
|  | 11.09.04, 192/19 | Barcelona | ECRHS1: NA |
|  | 11.09.04, 192/20 |  | ECRHS2: 20.05.02, 197/31 |
|  | 24.08.04, 194/18 |  | ECRHS3: 11.10.11, 198/31 |
|  | ECRHS3: 07.09.03, 194/19 |  | 04.10.11, 197/31 |
|  | 28.06.09, 193/18 | Albacete | ECRHS1: NA |
|  | 28.06.09, 193/19 |  | ECRHS2: 26.09.03, 199/03 |
|  | 30.06.09, 191/18 |  | 17.09.03, 200/33 |
|  | 30.06.09, 191/19 |  | ECRHS3: 09.10.11, 200/33 |
| Tartu | ECRHS1: 13.05.90, 187/19 | Huelva | ECRHS1: NA |
|  | ECRHS2: 03.08.99, 186/19 |  | ECRHS2: 15.09.03, 202/34 |
|  | ECRHS3: 08.06.11, 187/19 |  | ECRHS3: 05.09.11, 202/34 |