MINISTERO della SALUTE
Workshop "Clima e Salute"
Roma 16 giugno 2016
Piano nazionale per la prevenzione degli effetti del caldo sulla salute, Estate 2016"

Cambiamenti climatici, Esposizioni Ambientali e Malattie Respiratorie

Gennaro D'Amato

WAO
WORLD ALLERGY ORGANIZATION

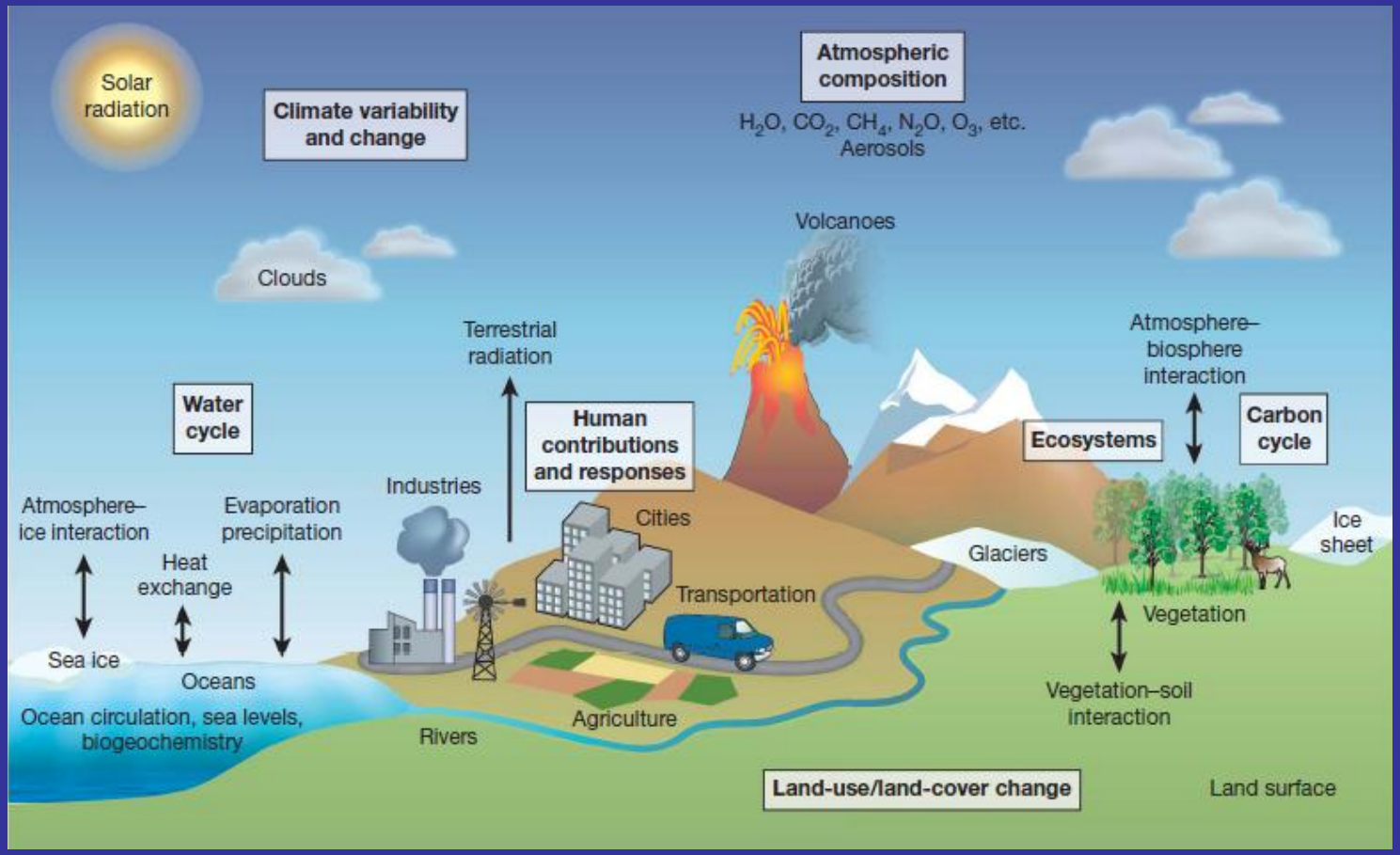
University Professor of Respiratory Medicine

Chairrman WAO committee and task force on
Climate Change, Asthma and Respiratory Allergy

Former director ,Division of Respiratory and Allergic Diseases
Department of Chest Diseases
High specialty Hospital "A. Cardarelli", Napoli, Italy

SCENARIOS

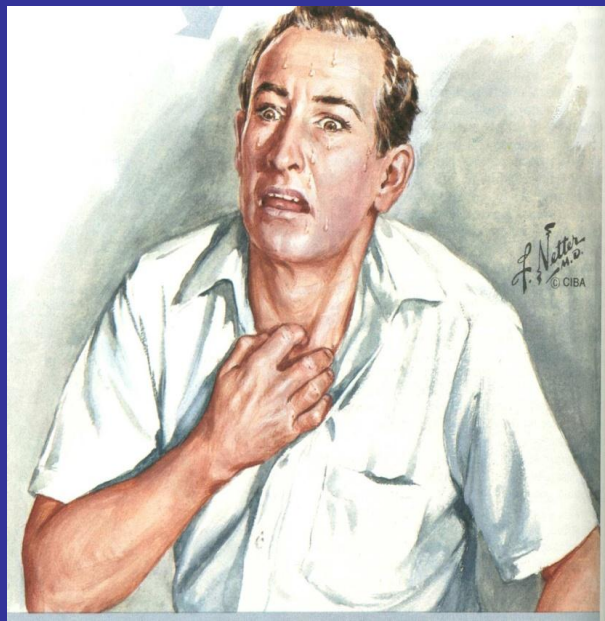
Major natural and anthropogenic processes and influences on the climate system addressed in scenarios



U.S. Climate Change Science Program, 2003

Why the trend to increased allergy and asthma in the population?

- Hereditary
- “Hygiene” hypothesis
  - Rates of immunization; early antibiotic use
- Indoor pollution-changes in air exchange
- Dietary factors
- Exposure to allergens in early life
- Outdoor air pollution and global warming.



D’Amato G “Respiratory allergy, Aeroallergens and other trigger factors (climate change ad air pollution).” Publ Momento Medico 2016

Global Warming Basics

WMO INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE UNEP

IPCC 4th ASSESSMENT REPORT ON CLIMATE CHANGE (2007):

2500+ SCIENTIFIC EXPERT REVIEWERS

800+ CONTRIBUTING AUTHORS AND

450+ LEAD AUTHORS FROM

130+ COUNTRIES

6 YEARS WORK

1 REPORT

WINNER OF THE NOBEL PEACE PRIZE

"Most of the observed increase in globally averaged temperatures since the mid-20th century is *very likely* [at least 90%] due to the observed increase in anthropogenic greenhouse gas concentrations."

CO2 is the most important anthropogenic greenhouse gas and about 75% of CO2 emissions during the past 20 years resulted from fossil fuel burning

Source: IPCC, 2007 (Working group I)

IPCC WGI Fourth Assessment Report (2007)

Climate Change

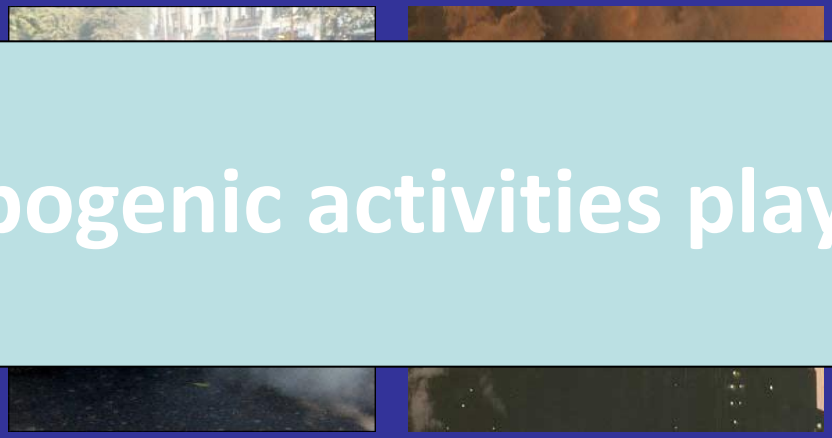
Increased atmospheric concentrations of CO_2 and other greenhouse gases:

- **increases in temperature (global warming) and humidity**

- **changes in the amount, distribution, and intensity of precipitation events**

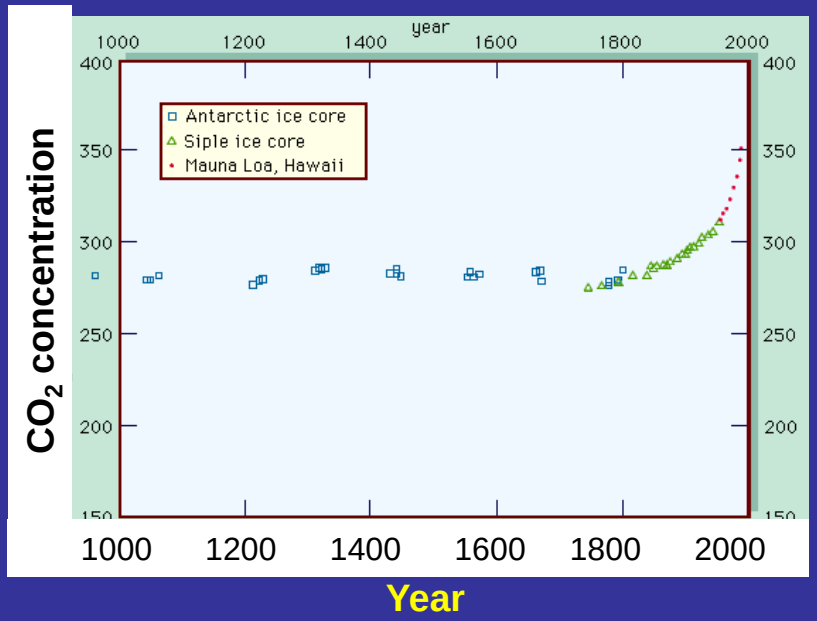
- **increases in the intensity and frequency of certain extreme weather events** (heat waves, floods, thunderstorms and hurricanes)

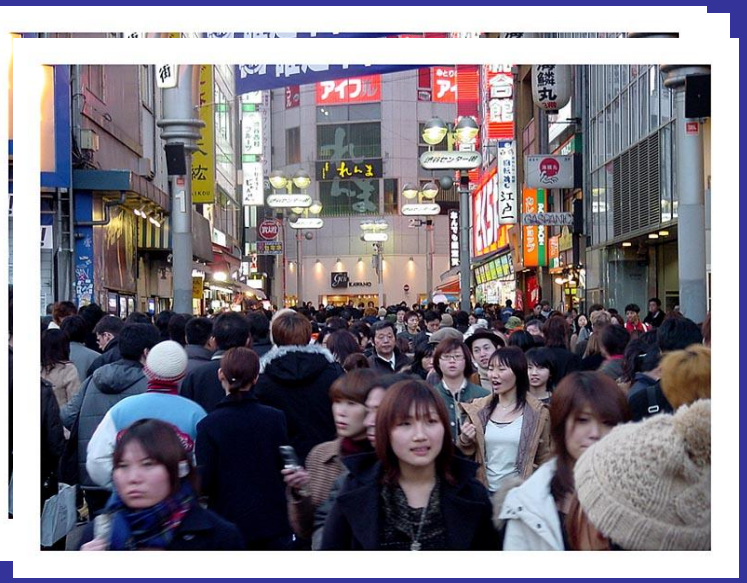
Solomon et al., 2007,
IPCC,

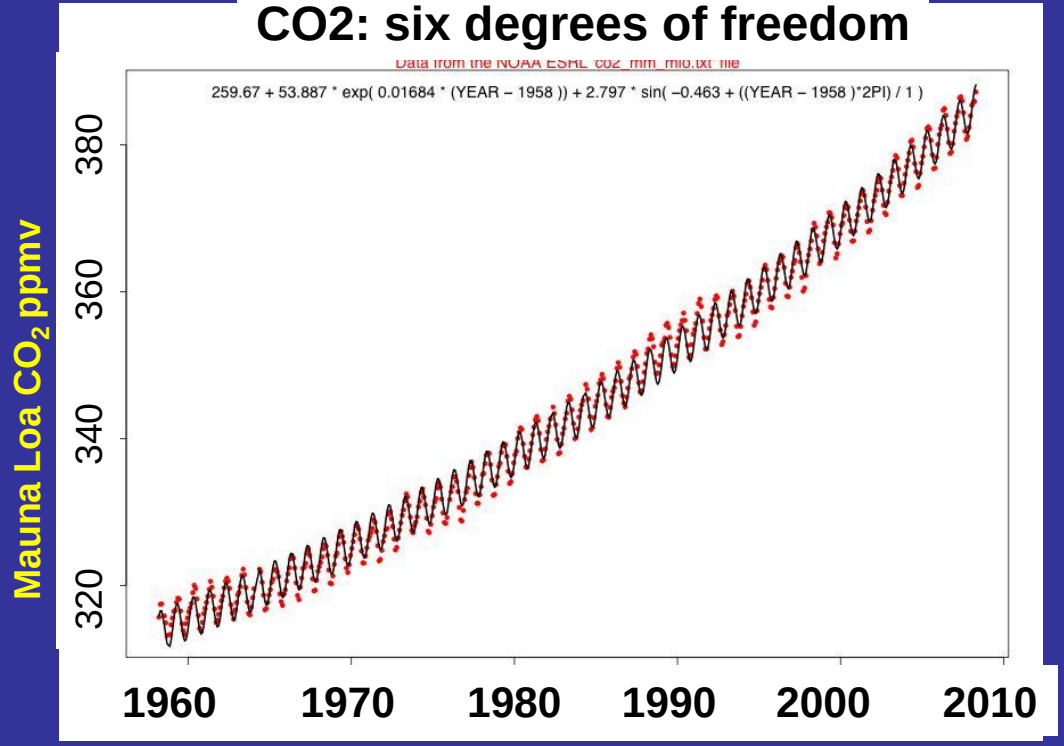


Anthropogenic activities play a key role

Anthropogenic CO_2 input

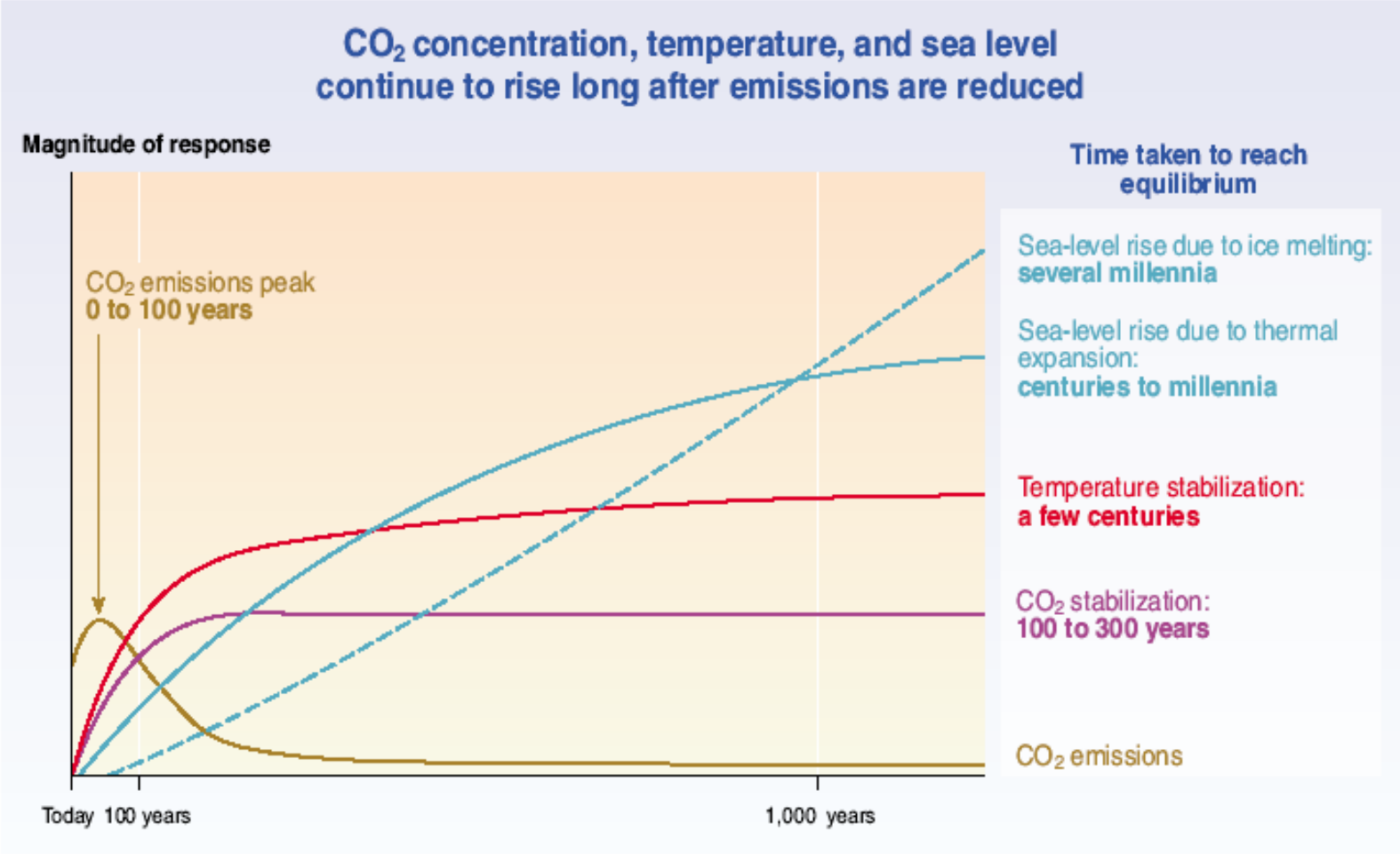






Long-term effects of CO_2: time to stabilization

After CO2 emissions are reduced and atmospheric concentrations stabilize, surface air temperature continues to rise slowly for a century or more



Potential Health Effects of Climate Change

Climate change:

- Temperature rise
- Sea level rise
- Hydrologic extremes

HEAT	Heat stress Cardiovascular failure
SEVERE WEATHER	Injuries, fatalities
AIR POLLUTION	Asthma Allergic conditions
VECTOR-BORNE DISEASES	Malaria Dengue Encephalitis Hantavirus Rift Valley fever
WATER-BORNE DISEASES	Cholera Cyclospora Cryptosporidiosis Campylobacter Leptospirosis
WATER AND FOOD SUPPLY	Malnutrition Diarrhea Harmful algal blooms
MENTAL HEALTH	Anxiety, despair, depression Post-traumatic stress
ENVIRONMENTAL REFUGEES	Forced migration Civil conflict

Adapted from J. Patz

Source: Dr. Howard Frumkin

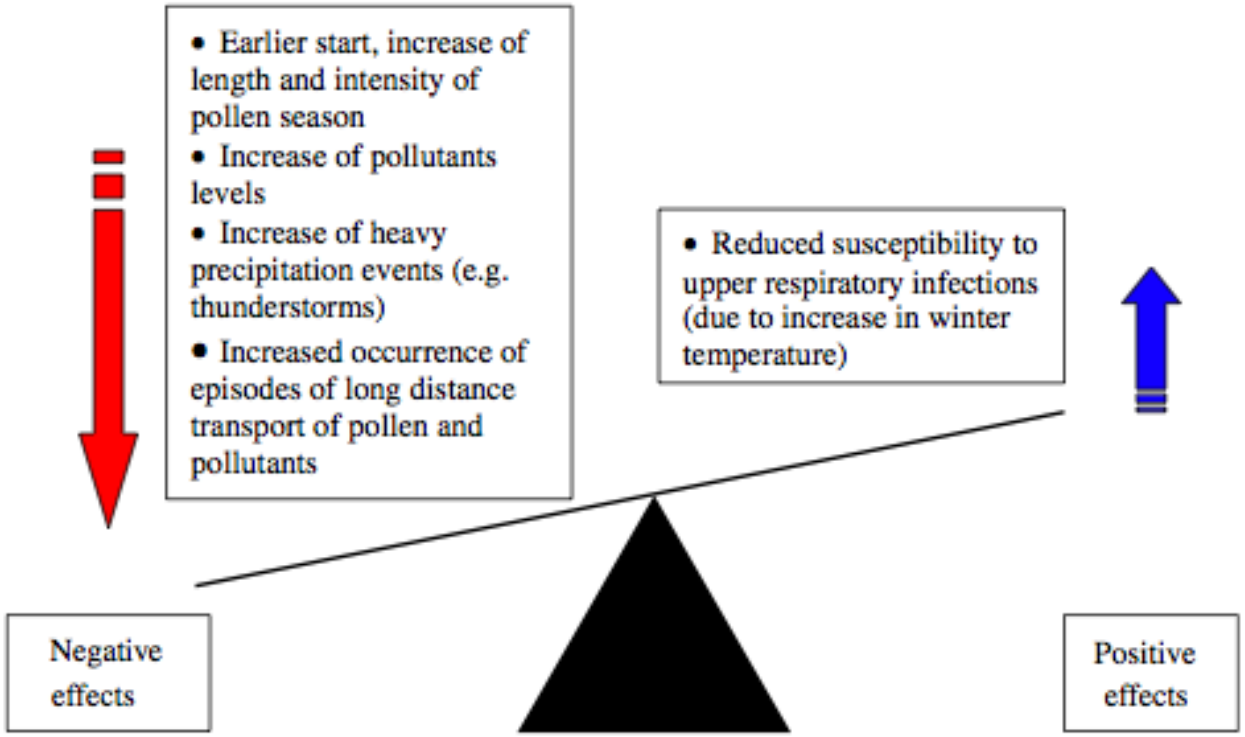
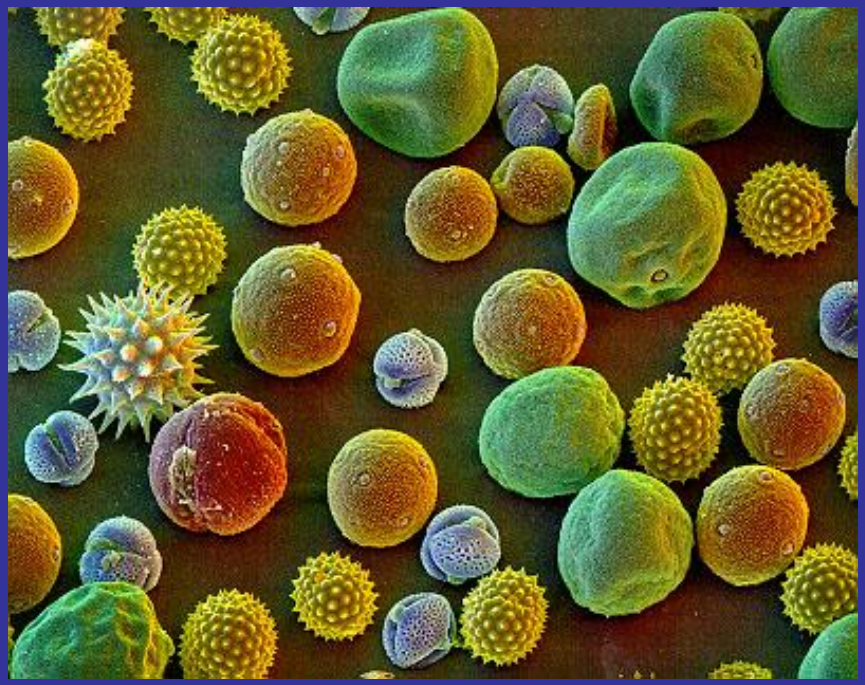


Fig. 1. Possible effects of climate change on patients affected by respiratory allergy (see text).

D'Amato et al. Clin Exp Allergy 2008

EFFECTS ON ASTHMA AND RESPIRATORY ALLERGY OF CLIMATE CHANGE AND AIR POLLUTION.

D'AMATO GENNARO, VITALE CAROLINA, DE MARTINO ANNAMARIA, VIEGI GIOVANNI, LANZA MAURIZIA, MOLINO ANTONIO, SANDUZZI ALESSANDRO, VATRELLA ALESSANDRO, ANNESI-MAESANO ISABELLA, D'AMATO MARIA.
MULTIDISCIP RESPIR MED. 2015 DEC 22;10:39. DOI: 10.1186/S40248-015-0036-X. ECOLLECTION 2015. REVIEW.
PMID: 26697186 FREE PMC ARTICLE



Meteorological Conditions, Climate Change, New Emerging Factors and Asthma. A Statement of the World Allergy Organization

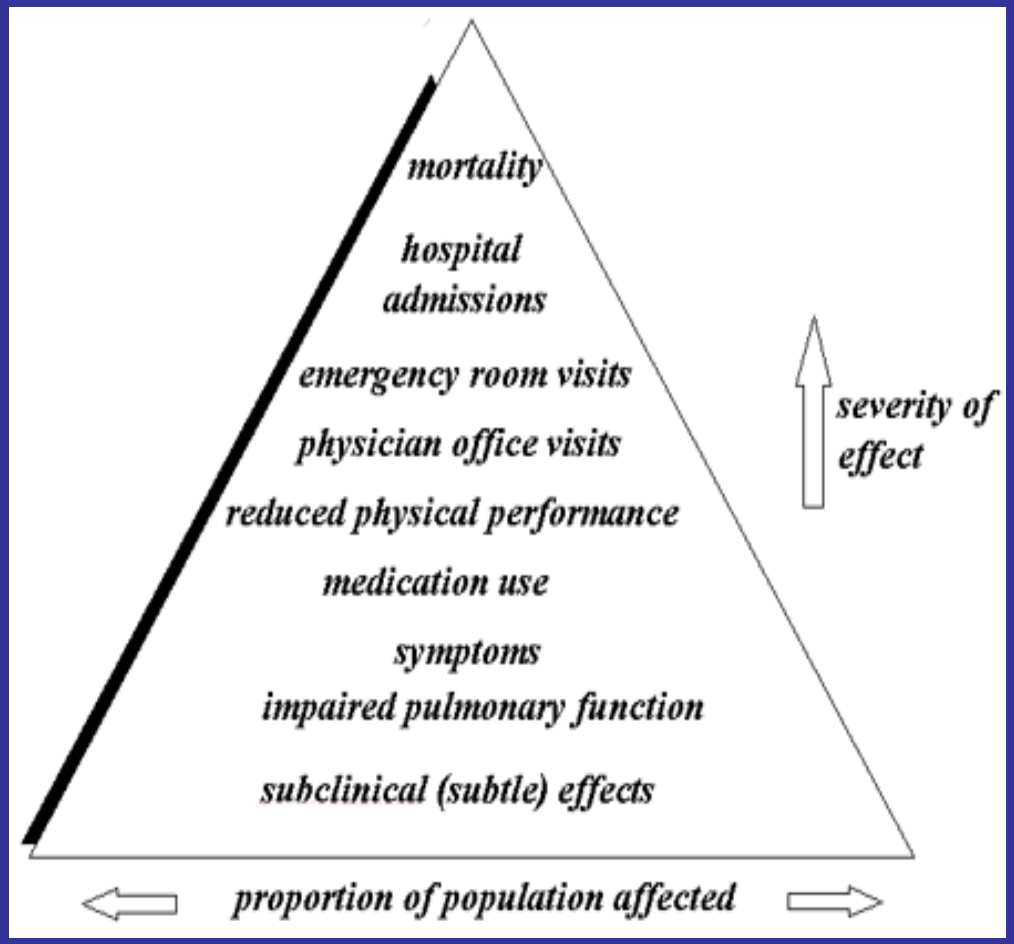
WAO Journal 2015

Gennaro D'Amato, Stephen T. Holgate, Ruby Pawankar, Dennis K. Ledford, Lorenzo Cecchi, Mona Al-Ahmad, Fatma Al-Enezi, Saleh Al-Muhsen, Ignacio Ansotegui, Carlos E. Baena-Cagnani, David J. Baker, Hasan Bayram, Karl Christian Bergmann, Louis Philippe Boulet, Jeroen T.M. Buters, Maria D'Amato, Sofia Dorsano, Jeroen Douwes, Sarah Elise Finlay, Donata Garrasi, Maximiliano Gómez, Tari Haahtela, Rabih Halwani, Youssouf Hassani, Dennis Ledford, Basam Mahboub, Guy Marks, Paola Michelozzi, Marcello Montagni, Carlos Nunes, Jae-Won Oh, Todor Popov, Jay Portnoy, Erminia Ridolo, Nelson Rosário, Menachem Rottem, Mario Sánchez-Borges, Elopy Sibanda, Juan José Sienra-Monge, Carolina Vitale, Isabella Annesi-Maesano

WAO

WORLD ALLERGY ORGANIZATION

Pyramid of Health Effects of PM

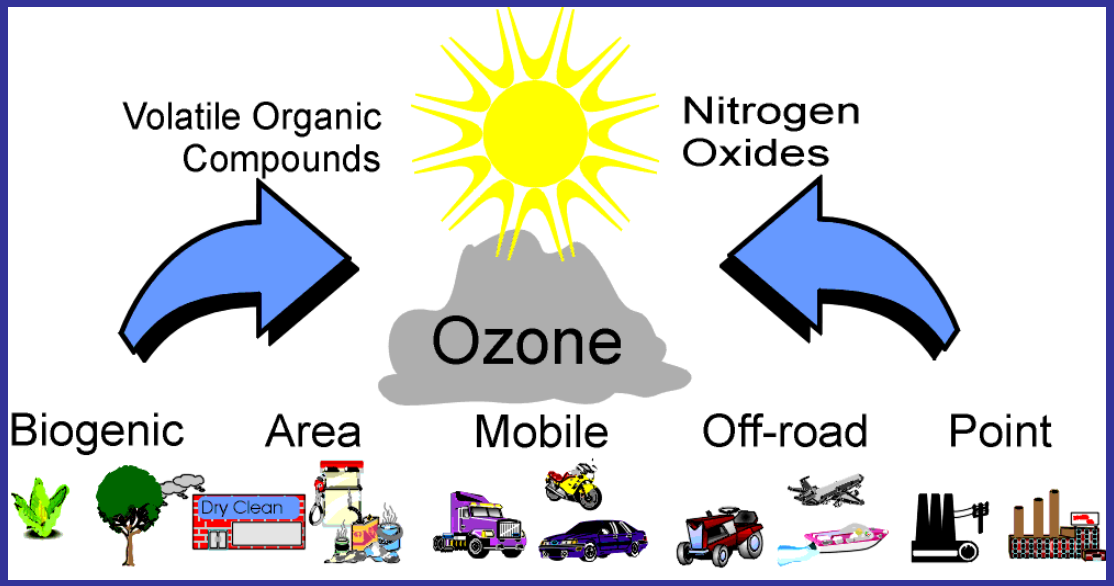


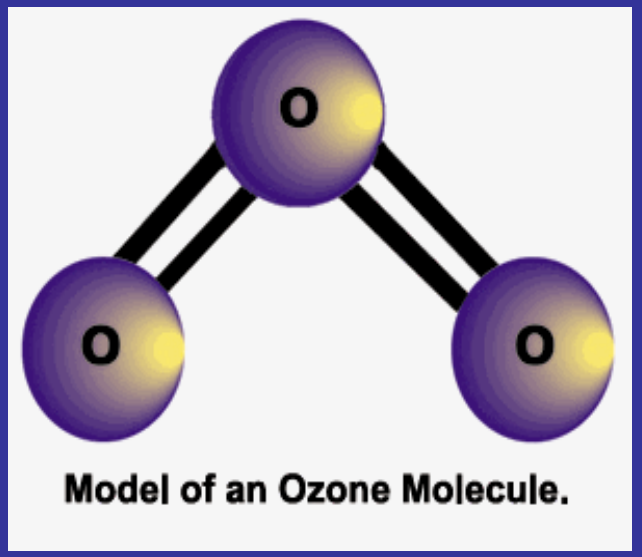
short-term vs. long-term effects

although there is probably a continuum of effects in the time scale, which are not yet fully understood

PM can affect both the respiratory and cardiac systems.

Ozone



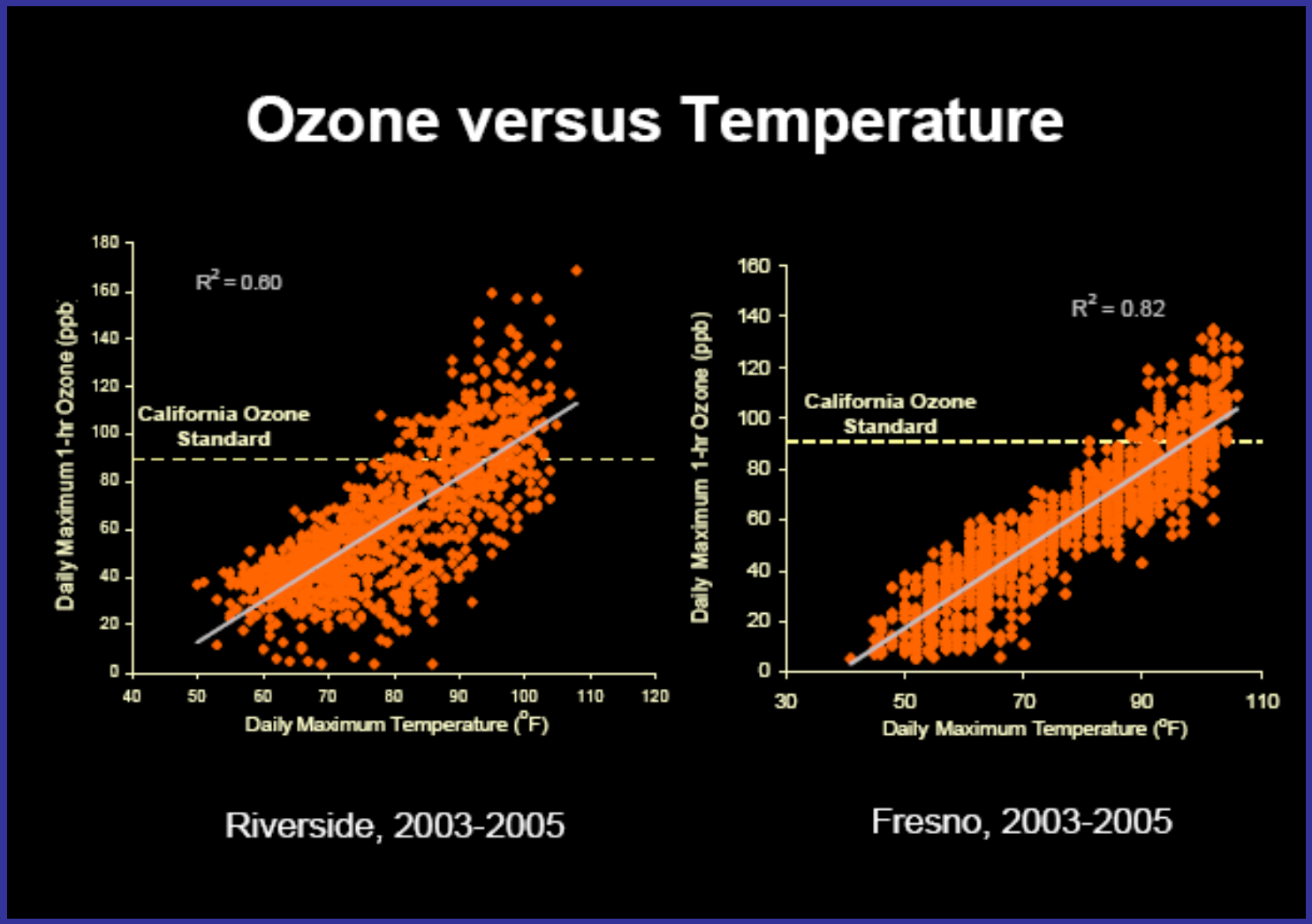


Ozone is a colorless, odorless gas formed when nitrogen oxides and volatile organic compounds react in the presence of intense sunlight.

OZONE FORMATION

Ozone is formed when nitrogen oxides (from fuel burning sources like utilities and automobiles) and volatile organic compounds (from sources such as gasoline, paints, inks and solvents) react in the presence of sunlight. The formation of ozone is dependent on the volume of air available for dilution, air temperature and the amount of sunlight.

Ozone Increases with Higher Temperatures



Acute Effects of Ozone

- Respiratory symptoms
- Acute decreases in lung function
- Increased airway responsiveness
- Airway injury and inflammation
- Systemic oxidative stress

Health Effects of Exposure to Ozone and $PM_{2.5}$

- coughing
- nose and throat irritation
- chest pain
- reduced lung function
- increased susceptibility to respiratory illness
- aggravation of asthma
- children with chronic lung disease are particularly at risk

- increased risk of cardiac arrest and premature death
- aggravation of asthma
- respiratory related hospital visits
- reduced lung function and chronic bronchitis
- work and school absences
- children with chronic lung disease are particularly at risk

WHO: More than 7 million **air pollution** deaths each year.
Kuehn BM.
JAMA. 2014 Apr 16;311(15):1486. doi: 10.1001/jama.2014.4031.

Hospital Admissions and ED visits for Asthma due to Ozone

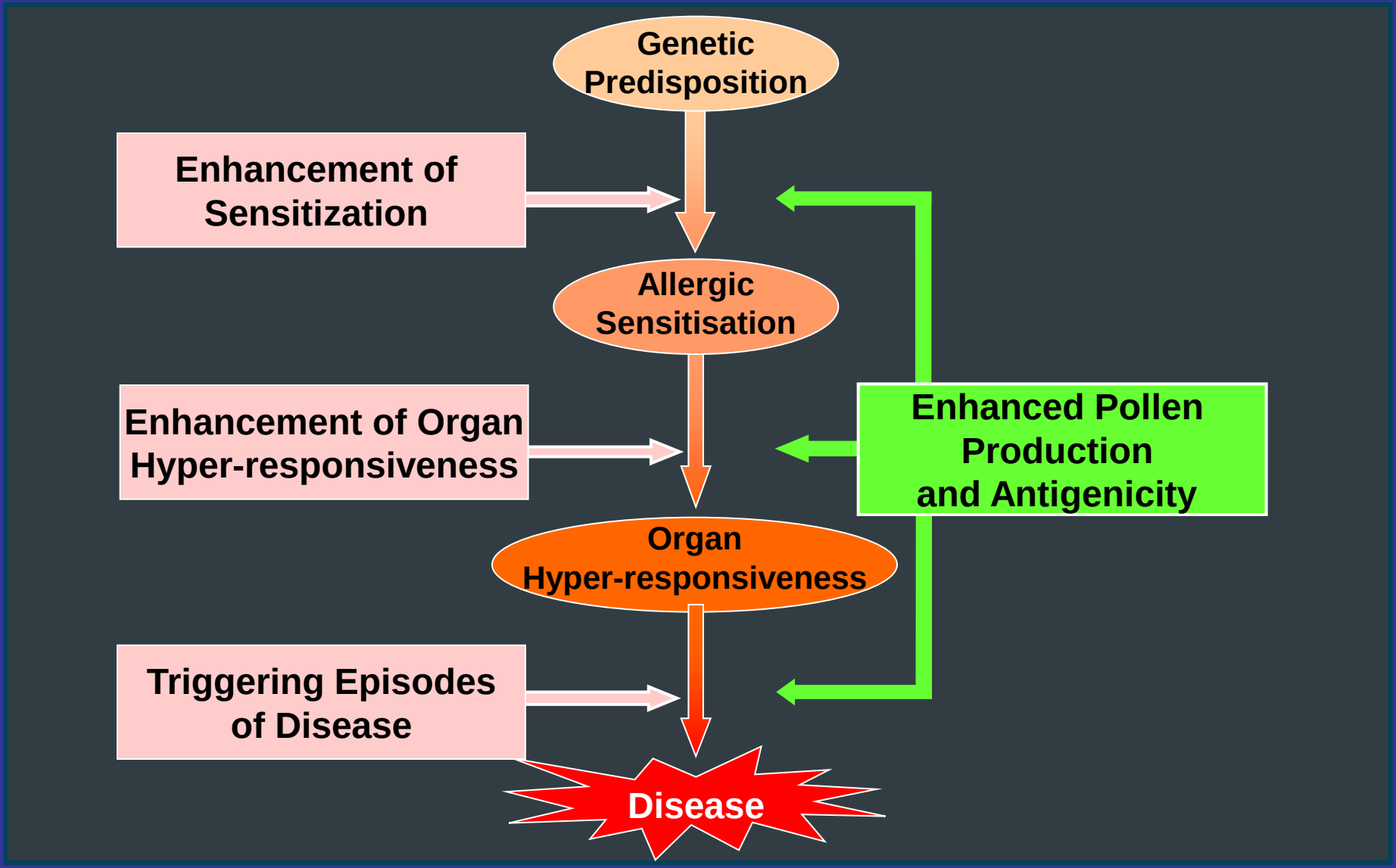
- Brisbane, Australia
  - Petroeschevsky et al; 13,246 hospital admissions for asthma showed a strong association between O_3 exposure and asthma exacerbations
- Atlanta
  - White et al 1994 showed that among black children from low-income families, asthma may be exacerbated following periods of high ozone pollution
  - Tolbert et al 2000 looked at pediatric emergency room visits from 1993-1995 and found ozone (>100 ppb vs. <50 ppb: odds ratio = 1.23, p = 0.003) with pediatric asthma exacerbations
- Toronto
  - Thurston et al-Correlation in admissions to the hospital during the summer and ozone levels
- Sydney
  - Jalaludin et al 2008-Increased ED visits from air pollution including ozone in children

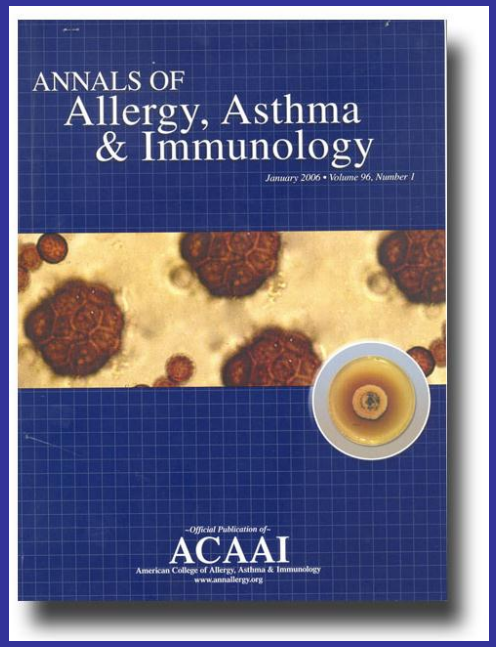
Climate Change and Allergens

- Increase plant growth
- Increase the amount of pollen produced by each plant
- Increase the amount of allergenic proteins contained in pollen
- Increase the start time of plant growth and therefore the start of pollen production

- **D'Amato G et al Position paper of EAACI "Allergenic pollen and pollinosis" Allergy 2007**

The Possible Ways by which Atmospheric Pollution may Increase Allergy

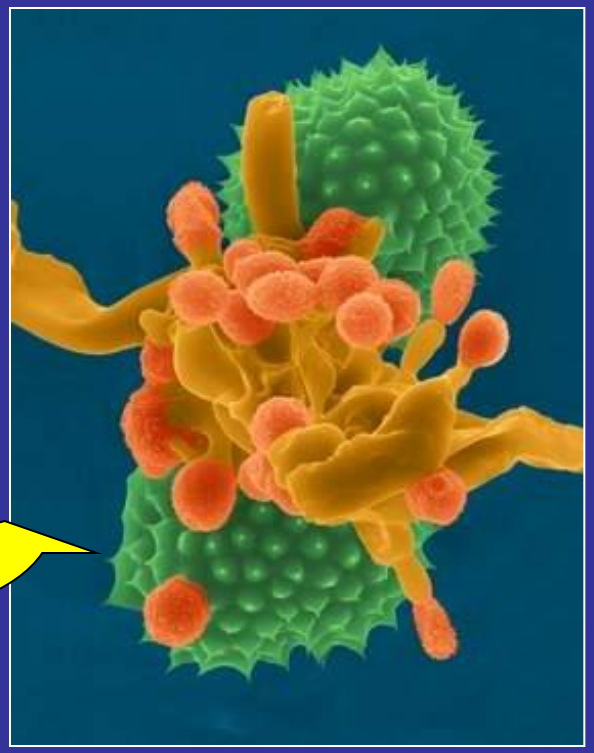




Production of allergenic pollen by ragweed (*Ambrosia artemisiifolia*) is increased in CO2 enriched atmospheres

Wayne P. et al Ann Allergy Asthma Immunol. 2002

A doubling of the <u>atmospheric CO2</u> concentration stimulated ragweed-pollen production by 61%

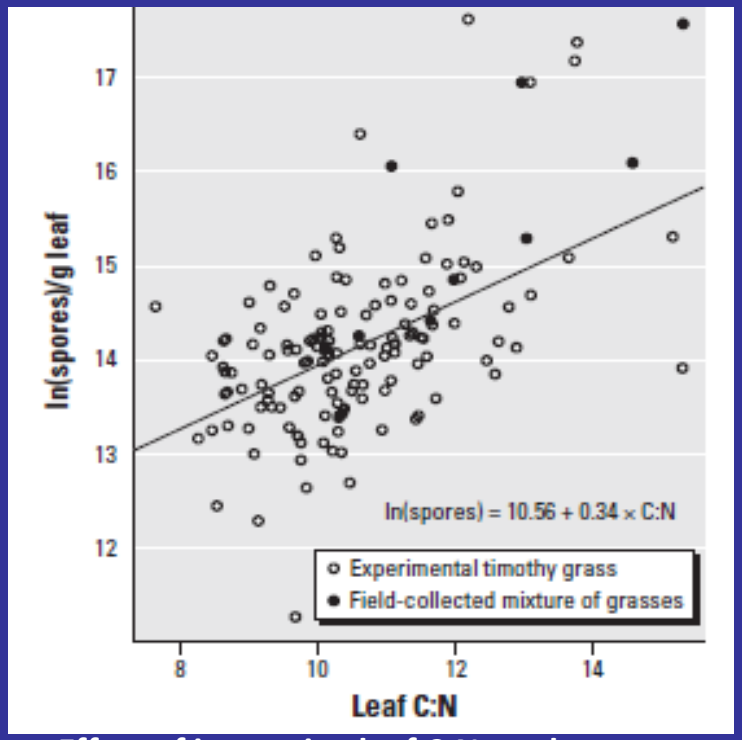


Mould Spores

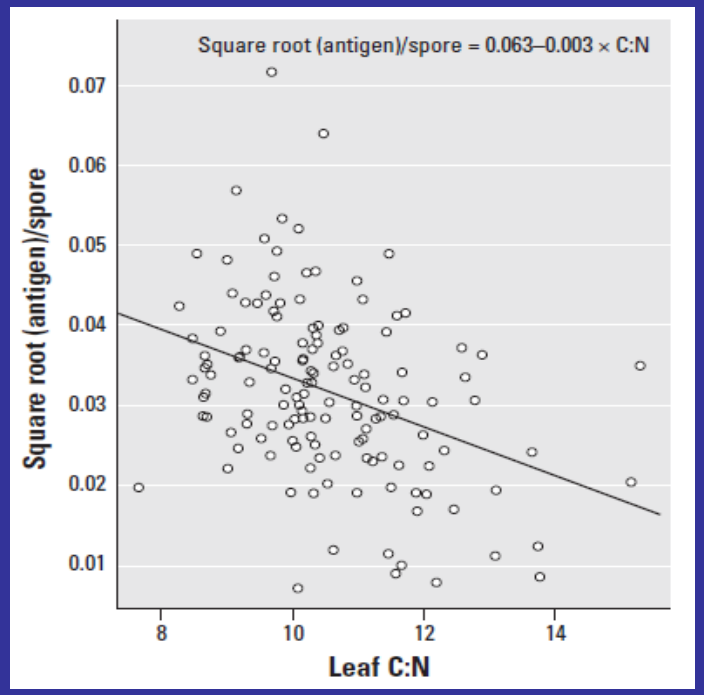
Elevated Atmospheric Carbon Dioxide Concentrations Amplify *Alternaria alternata* Sporulation and Total Antigen Production

Wolf J,et al Environ. Health Perspect 2010

At 500 and 600 mol/mol CO2 concentrations, *A. alternata* produced nearly 3 times the number of spores and more than twice the total antigenic protein per plant than at lower concentrations



Effect of increasing leaf C:N on the natural log of *A. alternata* spores



Effect of increasing *P. pratense* leaf C:N on the *A. alternata* spore antigen conten

Due to climate change, changes are also occurring in the amount, intensity, frequency and type of precipitation as well as the increase of extreme events, like heat waves, droughts, floods and hurricanes

Weather changes with Climate Change

- More extreme weather patterns, such as increase in thunderstorms
- High number of thunderstorms in spring and summer as same time at high pollen counts
- Pollen grain rupture with thunderstorms with higher levels of respirable allergens; also increase in ozone
- More asthma outbreaks
  - UK, Australia, and Italy

Davidson et al BMJ 1996; Bellomo et al, Med J Aust 1992; Girgis et al, Eur Resp J 2000; D'Amato et al , BMJ 2005; Clin Exp Allergy 2005
(Michael Blaiss in WAO J 2015)

Air Pollution Episodes

Isabella Annesi-Maesano (Section Leader), Tari Haahtela, Stephen T Holgate, Juan José Sienra-Monge, Hasan Bayram, Gennaro D'Amato

Thunderstorm-related Asthma

Gennaro D'Amato (Section Leader), Lorenzo Cecchi, Nelson Rosário, Guy Marks, Isabella Annesi-Maesano

Sandstorm

Saleh Al-Muhsen (Section Leader), Mona Al-Ahmad, Rabih Halwani, Basam Mahboub, Fatma Al-Enezi, Hasan Bayram

Climate Change and Respiratory Allergy

Gennaro D'Amato (Section Leader), Lorenzo Cecchi, Isabella Annesi-Maesano, Karl Christian Bergmann

Pollen Allergy and Meteorological Factors

Lorenzo Cecchi (Section Leader), Jeroen TM Buters, Jae-Won Oh, Ignacio Ansotegui, Carlos Nunes, Gennaro D'Amato

Molds, Rain, Humidity, Dampness

Jeroen Douwes (Section Leader), Maximiliano Gomez, Jay Portnoy

Allergy and Asthma in the Tropics

Carlos E Baena-Cagnani (Section Leader), Dennis Ledford, Ruby Pawankar, Mario Sánchez-Borges, Elopy Sibanda

Migration and Urbanization

Nelson Rosário (Section Leader), Menachem Rottem

The Role of Air Filtration as an Environmental Control Measure for Allergic Respiratory Disease

Gennaro D'Amato (Section Leader), Carolina Vitale, Maria D'Amato

Cold Weather

Todor A. Popov (Section Leader), Louis-Philippe Boulet, Paola Michelozzi

Wildfires and Asthma

Isabella Annesi-Maesano (Section Leader), Sarah Elise Finlay, Youssouf Hassani, David J Baker

Violent Conflict and Asthma

Donata Garrasi

Economical Aspects of Climate Change

Erminia Ridolo (Section Leader), Marcello Montagni

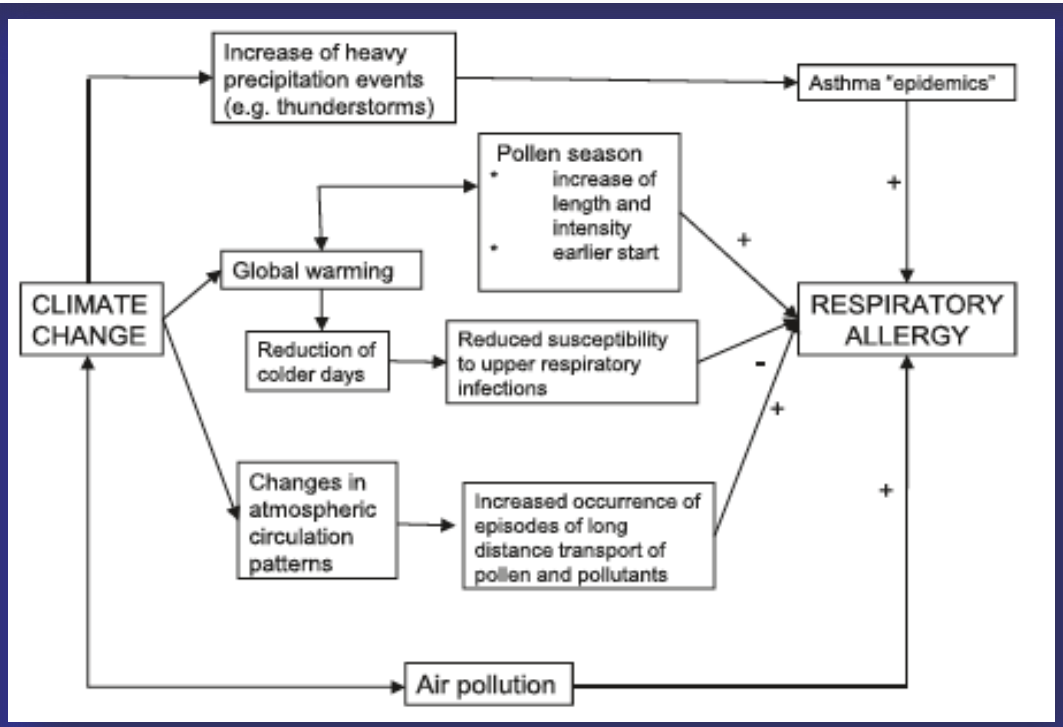
D'Amato *et al. World Allergy Organization Journal* (2015) 8:25
DOI 10.1186/s40413-015-0073-0

WAO journal
WORLD ALLERGY ORGANIZATION

REVIEW Open Access

Meteorological conditions, climate change, new emerging factors, and asthma and related allergic disorders. A statement of the World Allergy Organization

Gennaro D'Amato[1*], Stephen T. Holgate[2], Ruby Pawankar[3], Dennis K. Ledford[4], Lorenzo Cecchi[5], Mona Al-Ahmad[6], Fatma Al-Enezi[7], Saleh Al-Muhsen[8], Ignacio Ansotegui[9], Carlos E. Baena-Cagnani[10], David J. Baker[11], Hasan Bayram[12], Karl Christian Bergmann[13], Louis-Philippe Boulet[14], Jeroen T. M. Buters[15], Maria D'Amato[16], Sofia Dorsano[17], Jeroen Douwes[18], Sarah Elise Finlay[19], Donata Garrasi[20], Maximiliano Gómez[21], Tari Haahtela[22], Rabih Halwani[23], Youssouf Hassani[24], Basam Mahboub[25], Guy Marks[26], Paola Michelozzi[27], Marcello Montagni[28], Carlos Nunes[29], Jay Jae-Won Oh[30], Todor A. Popov[31], Jay Portnoy[32], Erminia Ridolo[28], Nelson Rosário[33], Menachem Rottem[34], Mario Sánchez-Borges[35], Elopy Sibanda[36], Juan José Sienra-Monge[37], Carolina Vitale[38] and Isabella Annesi-Maesano[39,40]



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D'Amato *et al. World Allergy Organization Journal* (2015)

AIR POLLUTION

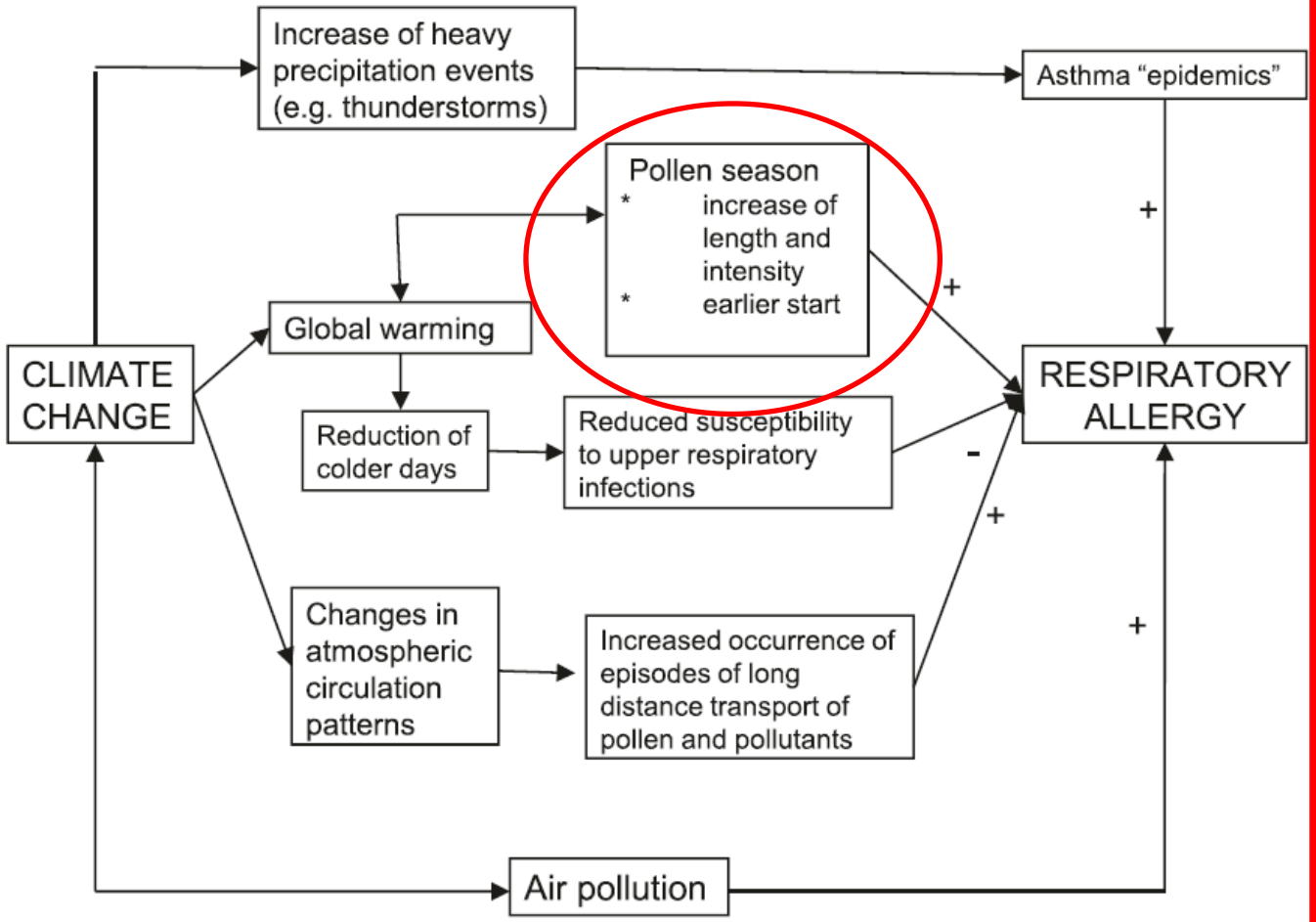
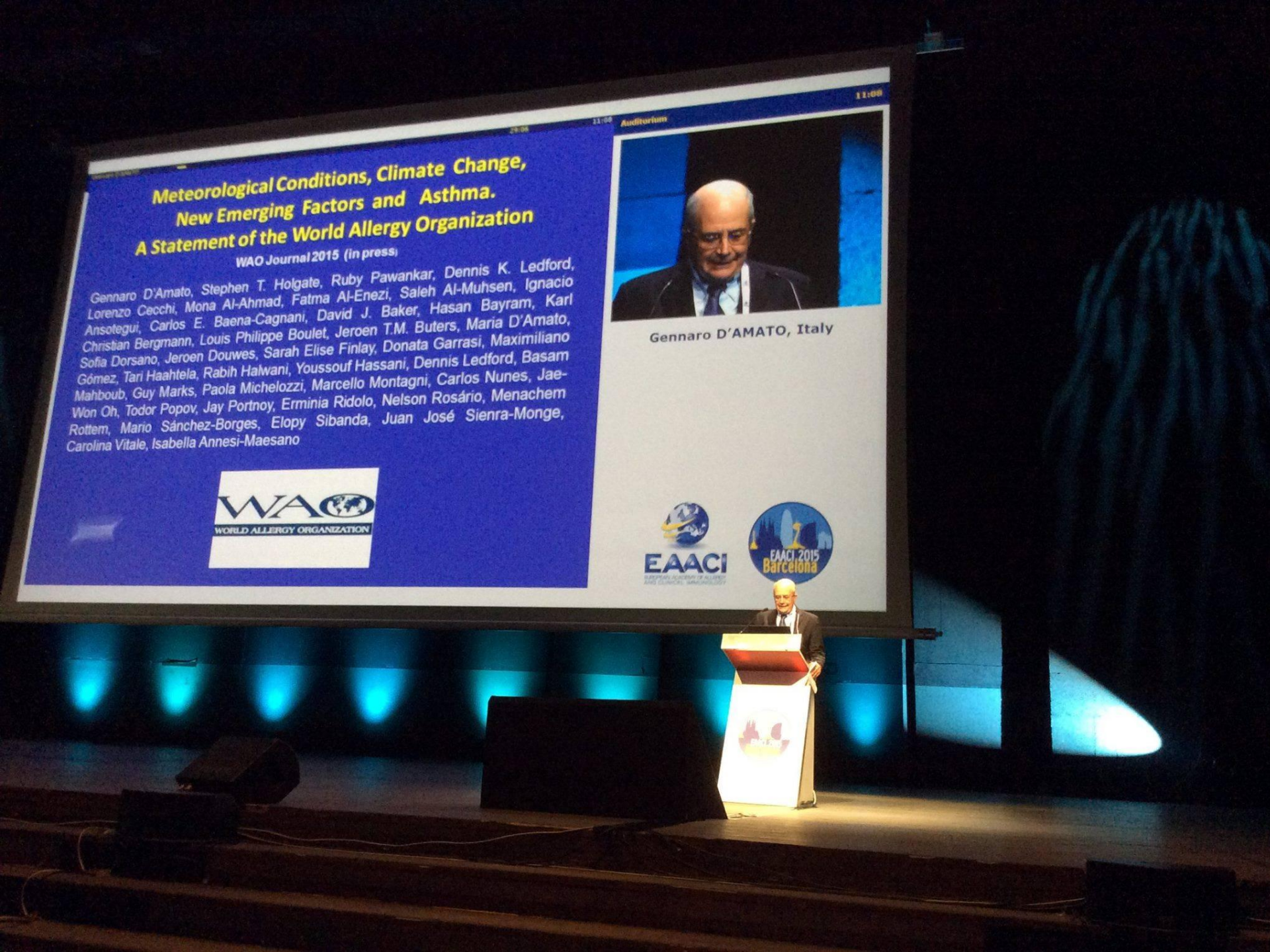


Fig. 3 Possible effects of climate change on respiratory allergy. Source: Lorenzo Cecchi, original drawing


Meteorological Conditions, Climate Change,
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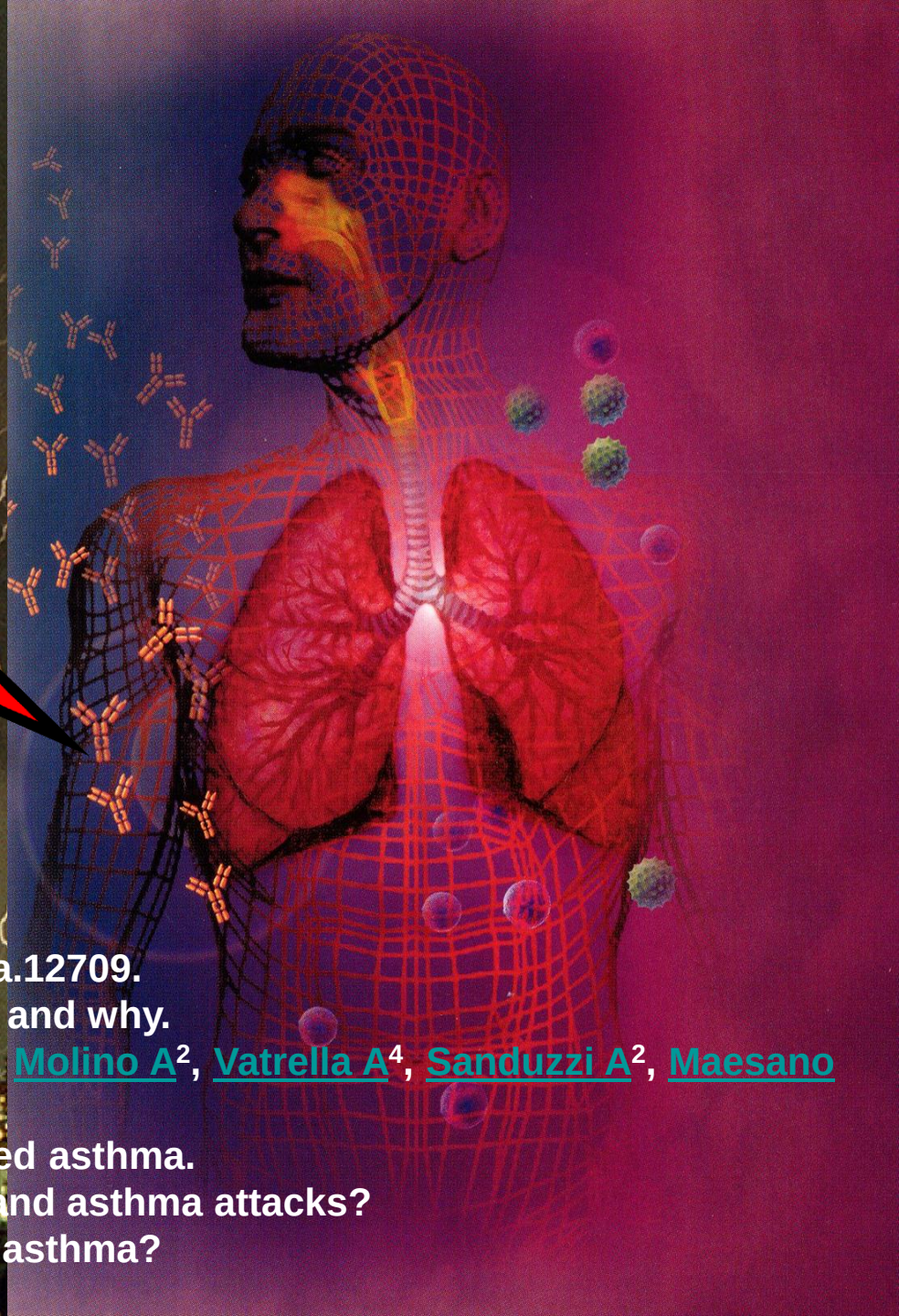
WAO
WORLD ALLERGY ORGANIZATION
Auditorium
Gennaro D'AMATO, Italy
EAACI
EAACI 2015
Barcelona


EAACI Congress 2015
6-10 June, Barcelona, Spain

The thunderstorm asthma



Clin Exp Allergy. 2016 Jan 14. doi: 10.1111/cea.12709.

Thunderstorm related asthma: what happens and why.

D'Amato G[1], Vitale C[2], D'Amato M[2], Cecchi L[3], Molino A[2], Vatrella A[4], Sanduzzi A[2], Maesano C[5], Annesi-Maesano I[5]

Possible mechanisms for thunderstorm-related asthma.

Is there a causal link between thunderstorm and asthma attacks?

Is it possible to predict thunderstorm related asthma?

London 25 June 1994

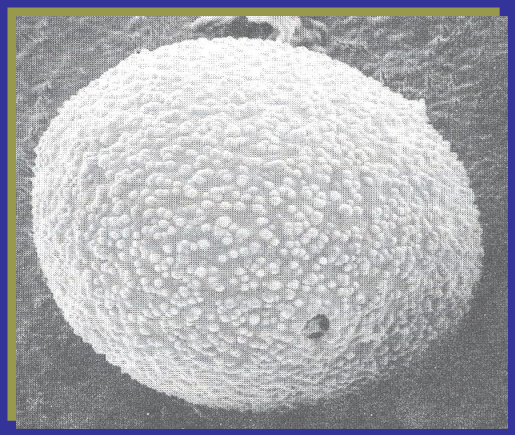
Celenza A et al. Thunderstorms associated asthma: A detailed analysis of environmental factors. BMJ 1996;312:604-607

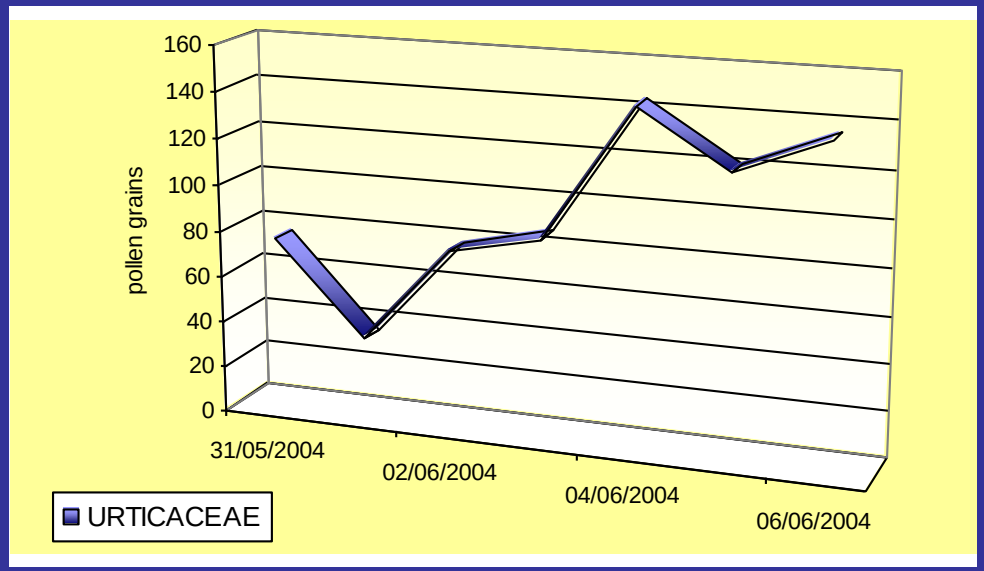
Thames Regions Accident and Emergency Trainer Association. A major outbreak of asthma associated with a thunderstorm: experience of accident and emergency departments and patients characteristics BMJ 1996;312:601-4

Bellomo R et al. Two consecutive thunderstorm associated epidemics of asthma in Melbourne.
Med J Aust 1992; 156: 834-7

Napoli 4 June 2004 (D'Amato G et al BMJ 2005; Clin Exp 2005; Allergy2007)

6 patients received treatment in emergency departments for severe asthma and one was admitted to an intensive care unit for acute respiratory insufficiency.





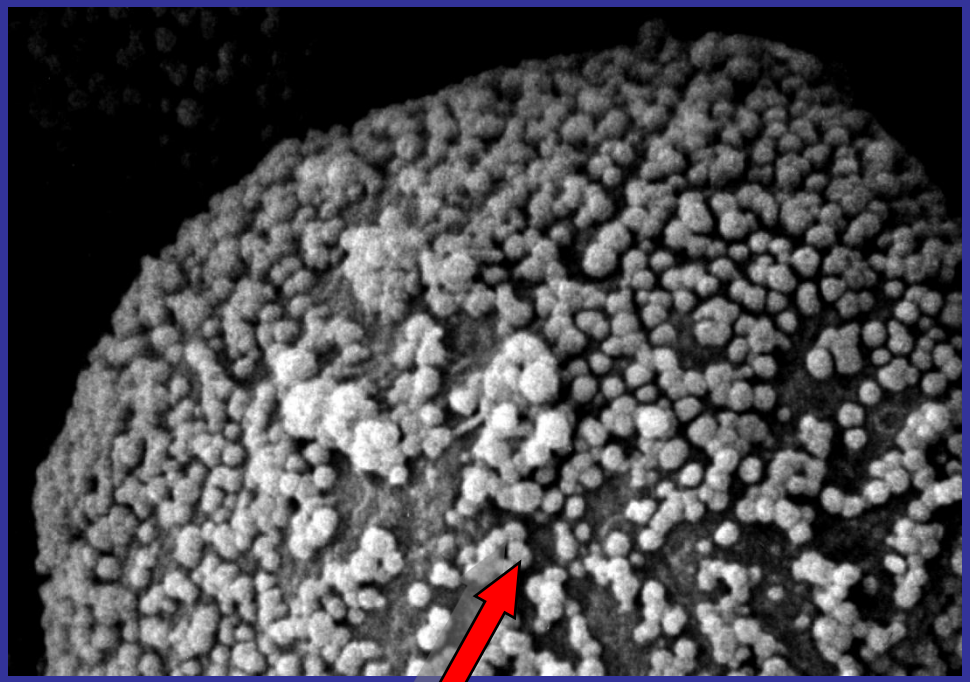
All patients were allergic to Parietaria pollen with symptoms during Spring-Summer months. The extraordinarily long persistence in the atmosphere of *Parietaria* pollen in southern Mediterranean area is responsible for a multiseasonal symptomatology.

Thunderstorm - associated asthma epidemics: observational evidence

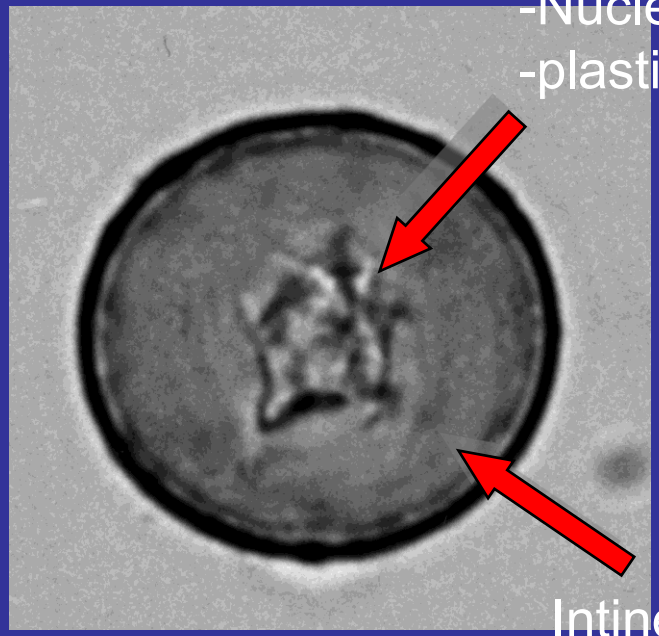
Table 1. Examples of thunderstorm-associated asthma outbreaks

Year	Country	Observations
1983	UK	26 sudden cases of asthma attacks in relation to thunderstorms
1992	Australia	Late spring thunderstorms in Melbourne can trigger epidemics of asthma attacks (five to 10-fold rise)
1997	UK	Asthma or other airways disease hospital visits. 640 cases who attended during a 30-h period on June 1994, nearly 10 times expected number
1992–2000	Canada	18 970 hospital ED asthma visits among children 2–15 years of age. Summer thunderstorm activity was associated with an OR of 1.35 (95% CI 1.02–1.77) relative to summer periods with no activity
1993–2004	USA	215 832 asthma ED visits; 24 350 of these visits occurred on days following thunderstorms. Significant association between daily counts of asthma ED visits and thunderstorm occurrence. Asthma visits were 3% higher on days following thunderstorms.
2000	Australia	Asthma visits during thunderstorms
		History of hayfever and allergy to ryegrass are strong predictors for asthma exacerbation during thunderstorms in spring
2001	Australia	The incidence of excess hospital attendances for asthma during late spring and summer was strongly linked to the occurrence of thunderstorm outflows
2002	UK	A case–control study of 26 patients presenting to Cambridge University Hospital with asthma after the thunderstorm
		Alternaria alternata sensitivity is a compelling predictor of epidemic asthma in patients with seasonal asthma and grass pollen allergy and is likely to be the important factor in thunderstorm-related asthma
2004	Italy	Six cases of thunderstorm-related asthma because of pollen (Paretaria)
2010	Italy	20 cases of thunderstorm-related asthma because of pollen (olive tree)
2010	Australia	Epidemics of 'thunderstorm asthma' that occurred in Melbourne during spring 2010
		The approach of spring, together with high winter rainfall in and around Melbourne that heralds another severe pollen season, raises the risk of allergic rhinitis and asthma in pollen-sensitive individuals

The pollinic allergens are located in the walls or in the cytoplasm



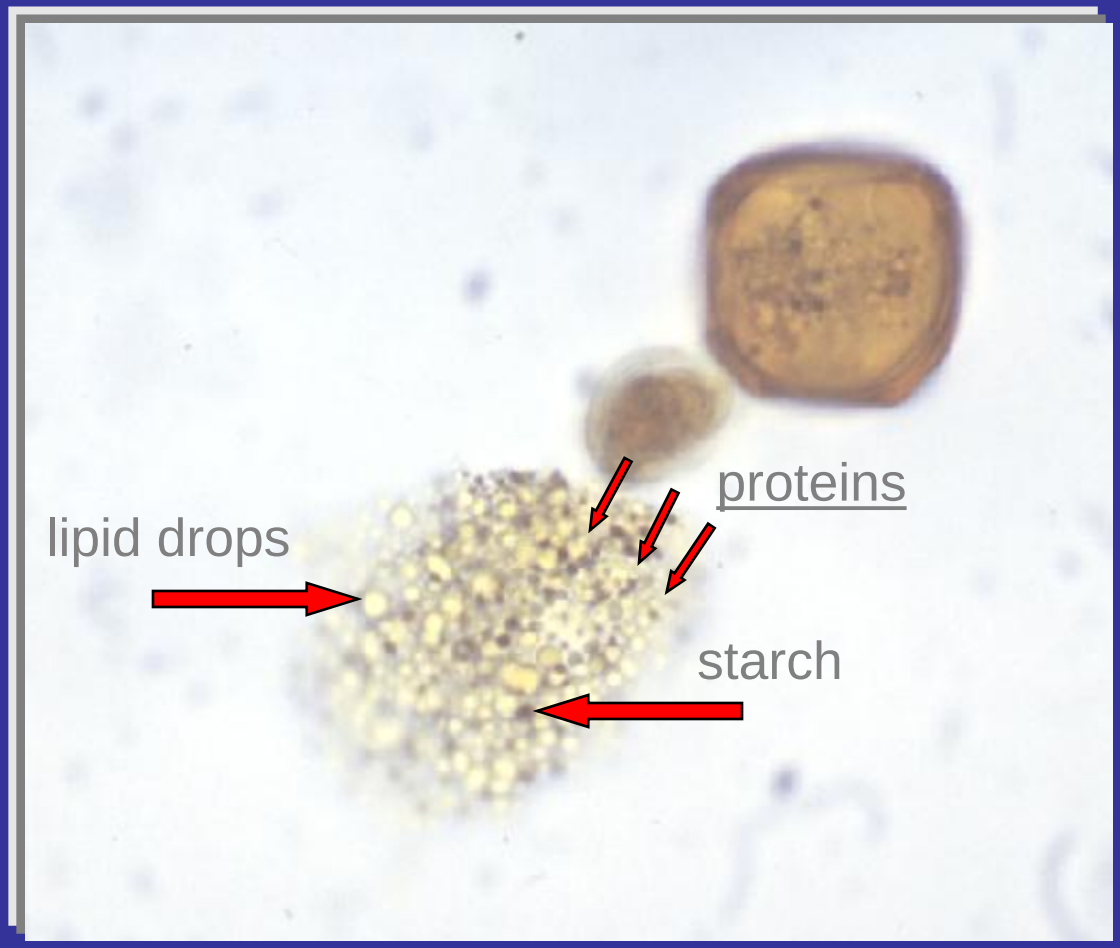
Orbiculs



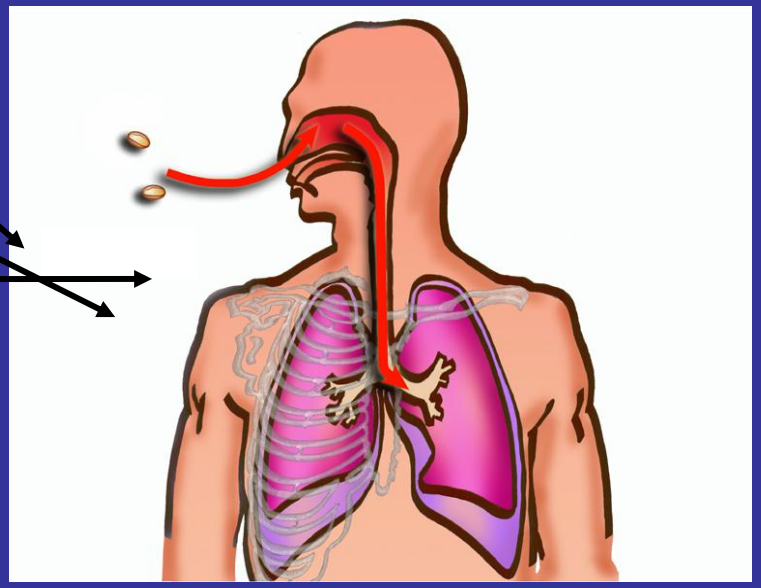
-cytoplasm
-R.E.
-Nucleous
-plastids

Intine

Hydrated pollen on a wet surface



Submicronic and/or paucimicronic particles in atmosphere



Pollen grains fragmented and dispersed in atmosphere

Climate Changes favour production also of Airborne Small Allergen-carrying Particles

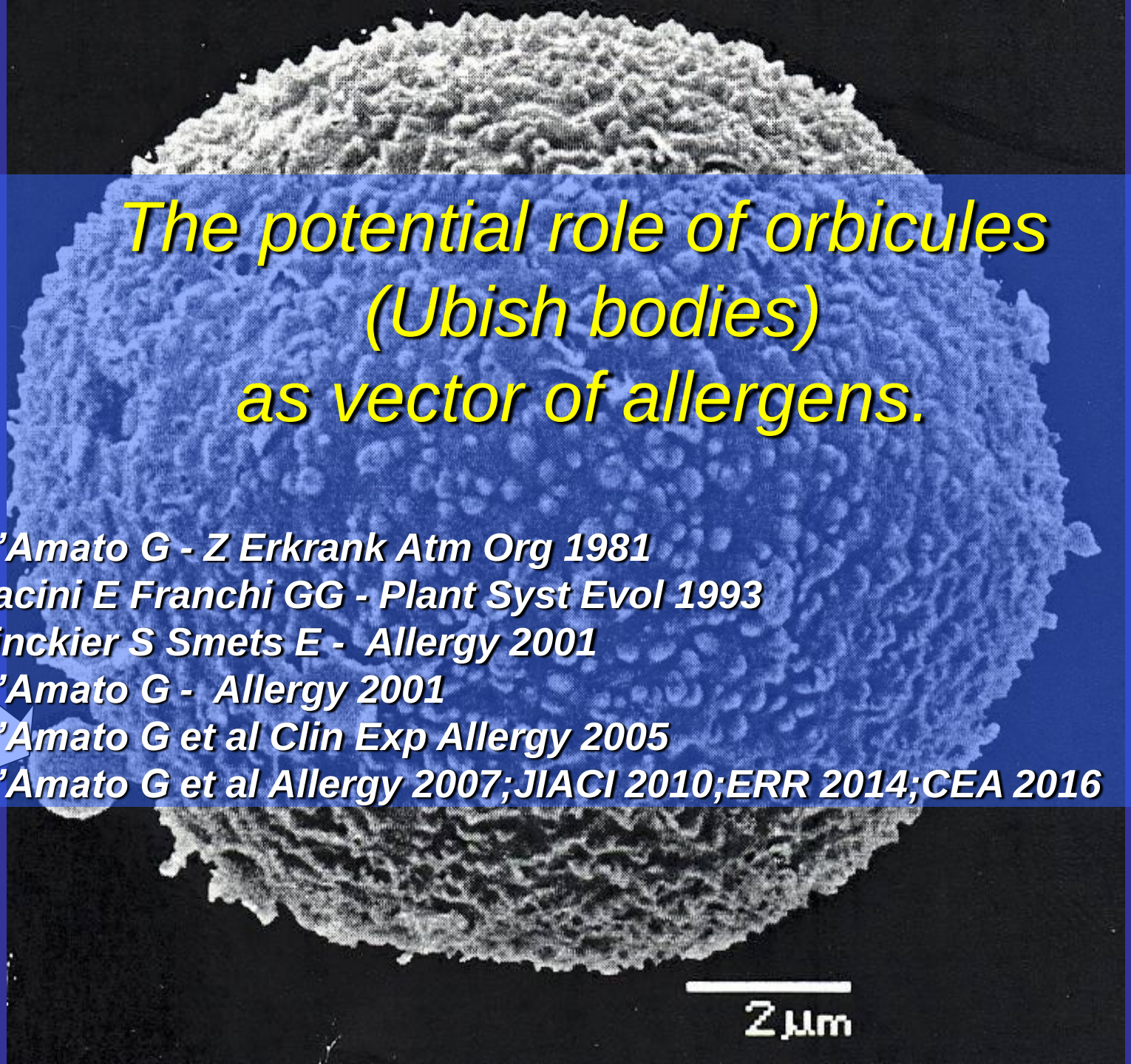
D'Amato G et al Allergy 2007; Clin Exp Allergy 2008,2016; JIACI 2010;ERR 2012;

- Pollen fragments
- Starch granules and other cytoplasmic granules
- Non-pollen plant parts (from inflorescences, leaves or Ubisch bodies)
- Non-plant particulate matter (allergens transferred through physical contact or by leaching from the surface of the pollen grain to other airborne small particles).

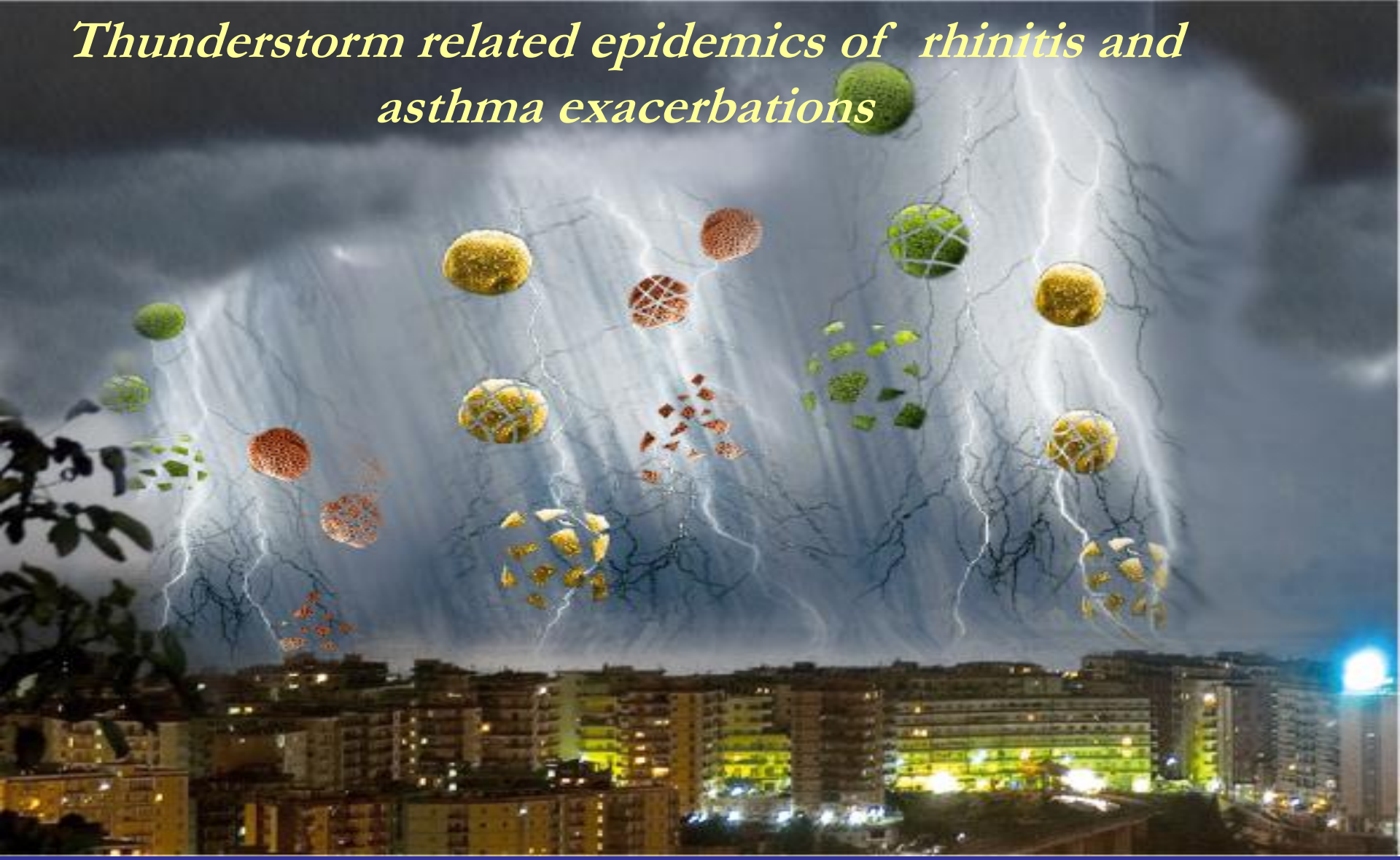
Pollen grains fragmented and dispersed in atmosphere during Thunderstorms

The potential role of orbicules (Ubish bodies) as vector of allergens.

D'Amato G - Z Erkrank Atm Org 1981
Pacini E Franchi GG - Plant Syst Evol 1993
Vinckier S Smets E - Allergy 2001
D'Amato G - Allergy 2001
D'Amato G et al Clin Exp Allergy 2005
D'Amato G et al Allergy 2007;JIACI 2010;ERR 2014;CEA 2016



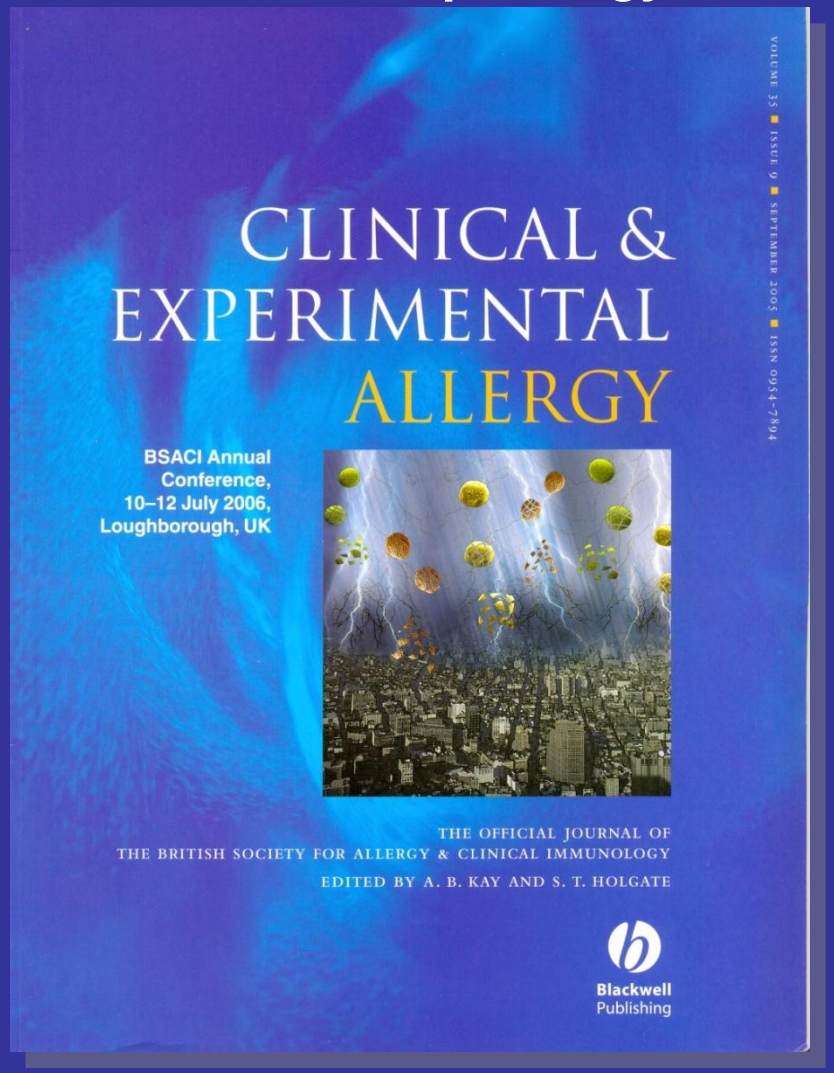
Thunderstorm related epidemics of rhinitis and asthma exacerbations



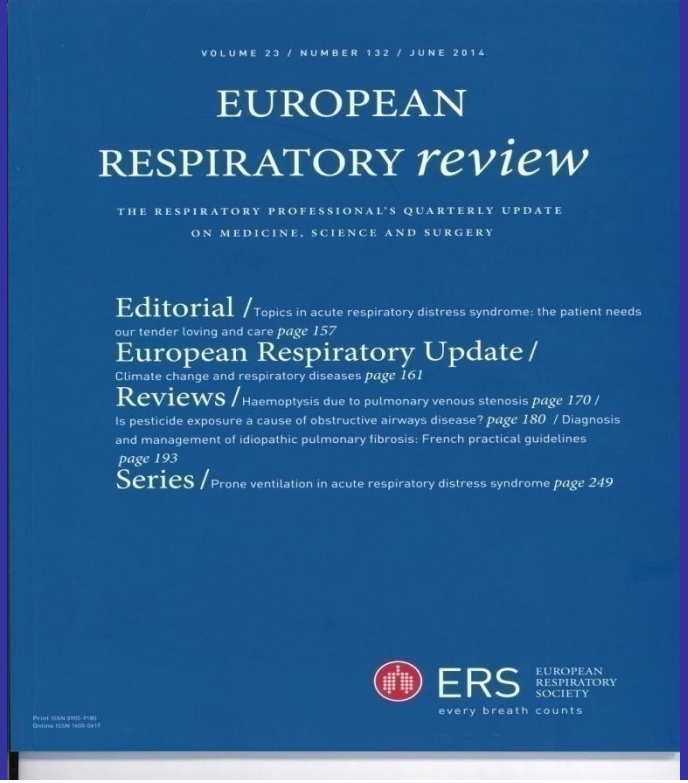
Under wet conditions or during thunderstorms pollen grains may, after rupture by osmotic shock, release part of their cytoplasmic content into the atmosphere.

D'Amato G, et al BMJ 2005; ClinExpAllergy2005;Allergy 2007;JACI2008;JIACI2010

D'Amato G et al.- Environmental risk factors and allergic bronchial asthma. Clin Exp Allergy 2005;35:1113-1124.



D'Amato G et al .Thunderstorm related asthma: what happens and why. Clin Exp Allergy 2016 Jan 14 doi: 10.1111/cea.12709



Climate change and respiratory diseases

Gennaro D'Amato[1], Lorenzo Cecchi[2], Mariella D'Amato[3] and Isabella Annesi-Maesano[4,5]

Affiliations: [1]Division of Respiratory and Allergic Diseases, Dept of Respiratory Diseases, High Speciality Hospital Antonio Cardarelli, Naples, Italy. [2]University of Florence, Florence, Italy. [3]First Division of Pneumology, High Speciality Hospital "V. Monaldi" and University "Federico II" Medical School, Naples, Italy. [4]EPAR, UMR-S 1136, Institute Pierre Louis of Epidemiology and Public Health, INSERM, Paris, France. [5]EPAR, UMR-S 1136, Institute Pierre Louis of Epidemiology and Public Health, UPMC Sorbonne Universités, Paris, France.

Correspondence: Isabella Annesi-Maesano, EPAR, UMR-S 1136, Institute Pierre Louis of Epidemiology and Public Health, INSERM and UPMC, Medical School Saint-Antoine, 27 rue Chaligny, 75571 Paris Cedex 12, France. E-mail: isabella.annesi-maesano@inserm.fr

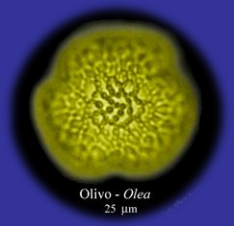
@ERSpublications
Climate change represents a threat to respiratory health by acting on respiratory diseases or their risk factors http://ow.ly/v6JEl

Weather changes with climate change:

- High number of thunderstorms in spring and summer at the same time at high pollen counts
- Pollen grain rupture with thunderstorms with higher levels of respirable allergens;
- More asthma outbreaks

Grass pollens

Parietaria pollens



Olea pollens

Alternaria

Thunderstorm-related asthma outbreaks and relapse. Gennaro D'Amato et al ERR 2014; Clin Exp Allergy 2016.

Thunderstorm –associated asthma epidemics: evidence based-knowledge

- There is a close temporal association between the start of the thunderstorm and the onset of asthma epidemics
- Asthma epidemics related to thunderstorms are limited to pollen (and outdoor mould) seasons
- There are not high levels of gaseous and particulate components of air pollution during thunderstorm-related asthma outbreaks
- Subjects with pollen allergy who stay indoors with the window closed during thunderstorms are not involved
- There is a major risk for subjects who are not receiving antiasthma treatment but subjects with allergic rhinitis and without previous asthma can experience severe bronchoconstriction
- Non-allergic subjects are not involved in thunderstorm-related asthma

Is there a causal link between thunderstorms and asthma attacks?

Hill's criteria	Application to the thunderstorm-related asthma
Strength The stronger the relationship between the independent variable and the dependent variable, the less likely it is that the relationship is due to an extraneous variable	Increased risk of asthma attacks in relation to thunderstorms
Consistency Multiple observations, of an association, with different people under different circumstances and with different measurement instruments increase the credibility of a finding	Association between thunderstorm and asthma found in different studies and different populations
Specificity Causation is likely if a very specific population at a specific site and disease with no other likely explanation. The more specific an association between a factor and an effect is, the bigger the probability of a causal relationship is [1]	Scantily demonstrated by experimental data (also sparse and heterogeneous)
Temporality The effect has to occur after the cause	Thunderstorms always precede asthma attacks
Dose–response relationship There should be a direct relationship between the risk factor (i.e. the independent variable) and people's status on the disease variable (i.e. the dependent variable)	Increased amount of pollen and mould spores at the beginning of the thunderstorm associated with increased probability of asthma attacks in pollen patients and other allergic patients

CASE REPORT | Eur Ann Allergy Clin Immunol | Vol 45, N o, 00-00, 2013

G. D'Amato[1], A. Corrado[2], L. Cecchi[3], G. Liccardi[1], A. Stanziola[4], I. Annesi-Maesano[5], M. D'Amato[4]

A relapse of near-fatal thunderstorm-asthma in pregnancy

[1]Division of Respiratory and Allergic Diseases, Department of Respiratory Diseases; High Speciality Hospital A.Cardarelli Napoli Italy - E-mail: gdamatomail@gmail.com
[2]Division of Respiratory Diseases, Hospital "Careggi" Florence Italy
[3]Allergy and Clinical Immunology Section, Azienda Sanitaria di Prato, Prato Italy
[4]Division of Respiratory Diseases, Medical School "Federico II", University Hospital "Dei Colli" Napoli, Italy
[5]INSERM, UMR S 707: EPAR, Paris, F-75012 France

D'Amato G et al. Eur Ann Allergy Clin Immunol , June 2013

A young lady who experienced near fatal asthma in concomitance with a thunderstorm in June 2004 was admitted again in the emergency room department of Cardarelli hospital in Naples on 24 May 2011 and on 28 May 2012 for other two attacks of near fatal asthma (the last, in 2012, in pregnancy).

NUTRIZIONE ARTIFICIALE

ENTERALE Nutrison E 500 ml
PARENTERALE Lacca Bon 6 fl di Azoto

- Glucosio 33% — Solamin 7,5%
- Glucosio 20% — A. essenziali
- Glucosio 10% — A. selettivi
- Glucosio 5% — A. ramificati — Sol n° 6
- Ivelip 20% — Ivelip 10% — Sol n° 7

Terapia | 12 | 16 | 18 | 20 | 24 | 4 | 6 | 8 | Fu

Clexane 4000 UI s.c. ore 6
Tachipirina 2 fl + 2 ev. ore 18, ore 6
Plavix 1 fl + 2 ev. ore 18, ore 6
Ca gluconato 1 fl in 100 ml fisiol ore 18
Maxipiu 3 fl + 6 ev. (6° giorno) ore 18, ore 24, ore 6
Aerosol: Bruve 5 gtt, Clenil 1 fl, Oxivent 10 gtt — ore 16, ore 8
Solfato di Mg 2 g e.v. in 20 minuti — ore 16 — già prescritto
Furosemide 1 fl per SNG ore 18
Fortizyt 1 fl in 100 ml fisiol (fino al 10.05) ore 20

SIGLA INFERMIERE →

pompa

~~Dopamina~~	+	→ sospeso	ml/ora 20	~~Milrinone 2 fl~~ →
Aminoval 2 fl	+	fisiol 100 ml	ml/ora 4	Ventolin 500 γ
Soluzione 1 fl	+	fisiol 250 ml	ml/ora 10 → 5	

Letto n° 1SOL 1

A.O.R.N. "A. Cardarelli" - Napoli
U.O.S.C. di Anestesia e Rianimazione
Direttore f.f.: Dott.ssa M. De Cristofaro

Data 5/6/12

Nome Paziente [redacted] data di nascita 5/4/76 NN 25329

Stato: VALIDATO
31/05/2012 12:15:55
Tipo campione: Arterioso
Campione No.: 436
Paziente:
Nome: [redacted]
Sesso: S
Strumento:
Modello: GEM 3000
S/N: 14845

Misurati (37.0C)

pH	7.22	
pCO2	103	mmHg
pO2	132	mmHg
Na+	129	mmol/L
K+	4.9	mmol/L
Ca++	1.02	mmol/L
Glu	138	mg/dL
Lat	0.8	mmol/L
Hct	37	%

Parametri derivati

Ca++(7.4)	0.95	mmol/L
HCO3-	42.2	mmol/L
HCO3std	33.5	mmol/L
TCO2	45.4	mmol/L
BEecf	14.5	mmol/L
BE(B)	11.0	mmol/L
SO2c	98	%
THbc	11.5	g/dL
?A-aDO2	-----	
?pAO2	-----	
?paO2/pAO2	-----	

Stato: VALIDATO
13/06/2012 11:53:35
Tipo campione: Arterioso
Campione No.: 260
ID Paziente: 050476. Nome Pazie
Commenti: 36 ESIBITO IN ARIA
Strumento: Modello: GEM 3000

EMO

Misurati (37.0C)

pH	7.48	
pCO2	34	mmHg
pO2	75	mmHg
Na+	136	mmol/L
K+	3.5	mmol/L
Ca++	1.01	mmol/L
Glu	114	mg/dL
Lat	2.4	mmol/L

Parametri derivati

Ca++(7.4)	1.04	mmol/L
HCO3-	25.3	mmol/L
HCO3std	26.5	mmol/L
TCO2	26.3	mmol/L
BEecf	1.8	mmol/L
BE(B)	2.1	mmol/L
SO2c	96	%
?THbc	-----	
A-aDO2	32	mmHg
pAO2	107	mmHg
paO2/pAO2	0.70	
RI	0.4	

AZIENDA OSPEDALIERA DI RILIEVO NAZIONALE
A. CARDARELLI

NAPOLI

Via A. Cardarelli, 9 - 80131 NAPOLI - Tel. 081-7471111 - Fax 081-7472625

3939525709 fratello

335 7435253 cognata

Anno 2012

DIVISIONE FILTRO / 36 PAM

CARTELLA CLINICA N. 35332 P

LETTO N.

COGNOME [redacted] NOME [redacted] SESSO M 1 F 2 DATA DI RICOVERO 29/05/2012 ORA DI RICOVERO

DATA DI NASCITA 05/04/1976 COMUNE DI NASCITA NAPOLI

STATO CIVILE

celibe 1 coniugato/a 2 separato/a 3 divorziato/a 4 vedovo/a 5

PATERNITÀ E MATERNITÀ

LUOGO DI RESIDENZA IVI INDIRIZZO TEL.

CITTADINANZA DOCUMENTO

ASL e DISTRETTO di appartenenza; MEDICO CURANTE (cognome e nome).

PROVENIENZA DEL PAZIENTE

SENZA PROPOSTA DI RICOVERO 1 PROPOSTA MEDICO DI BASE 2 PROPOSTA SPECIALISTICA 3 ALTRO IST. PUBBLICO 4 ALTRO IST. PRIVATO 5 NIDO STESSO ISTITUTO 6

TIPO DI RICOVERO

ORDINARIO 1 TSO 3

URGENTE 2 TSV 4

MOTIVO DEL RICOVERO

INTERVENTO CHIRURGICO DI ELEZIONE 1

PRIMA DIAGNOSI 2

RICOVERO STESSA DIA

TRAUMATISMI INTOSSICAZIONE

INFORTUNI DI LAVORO 1 INCIDENTE DOMESTICO 2 INCIDENTE STRADALE 3 VIOLENZA ALTRUI 4 AUTOLESIONE SUICIDIO 5

PROBLEMA/DIAGNOSI DI ACCETTAZIONE Stato ansioso REPARTO DI AMMISSIONE

Il Medico accettazione

GRUPPO SANGUIGNO Trattamento anticoag. G./

Diagnosi definitiva

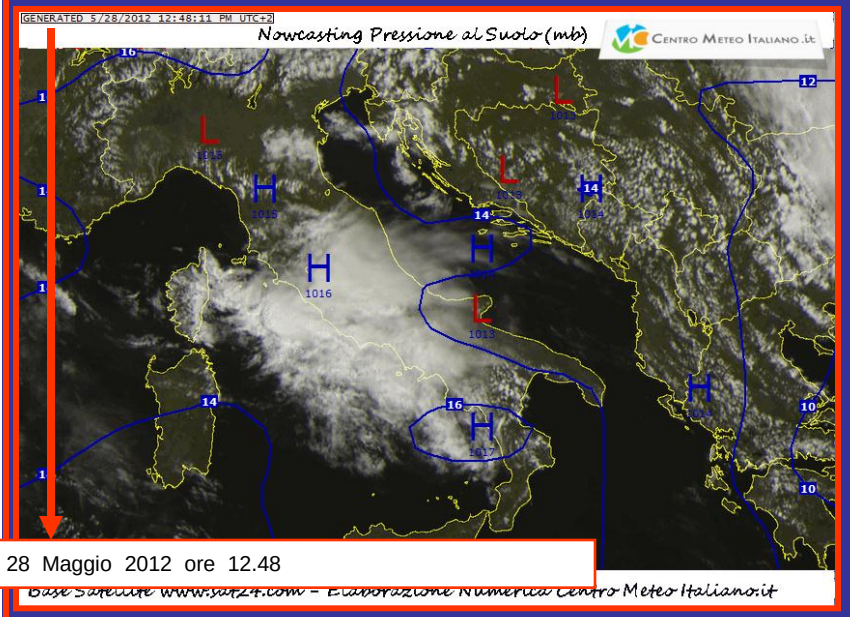
Esito

Trasferimento 36ª 11/06/2012

Data di ammissione Data di dimissione

IL PRIMARIO IL DIRETTORE

Mod. DD/1 - EDITRICE CERBONE - 081835357



CONSULENZA SPECIALISTICA: Allergologia (in sala) 29/5/2012 Quesito Giunta al V mese

Lavorante affetta da asma bronchiale allergica da polline di parietaria di grado severo fin da anni, si al tempo episodio di riacutizzazione "non grave" la risalita di asma a seguito di esposizione ambientale in corso di temporale. - Referti di esami tratti dal fascicolo

Auscultazione polmonare molto compromessa, diffusa fortissima una minaccia la terapia farmacologica

L'esame clinico respiratorio evidenzia un quadro di bronchospasmo serrato in fase espiratoria.

CONSULENZA SPECIALISTICA: Quesito

L'esame EGA evidenzia un innalzamento dei valori di PCO2 rispetto al basale.

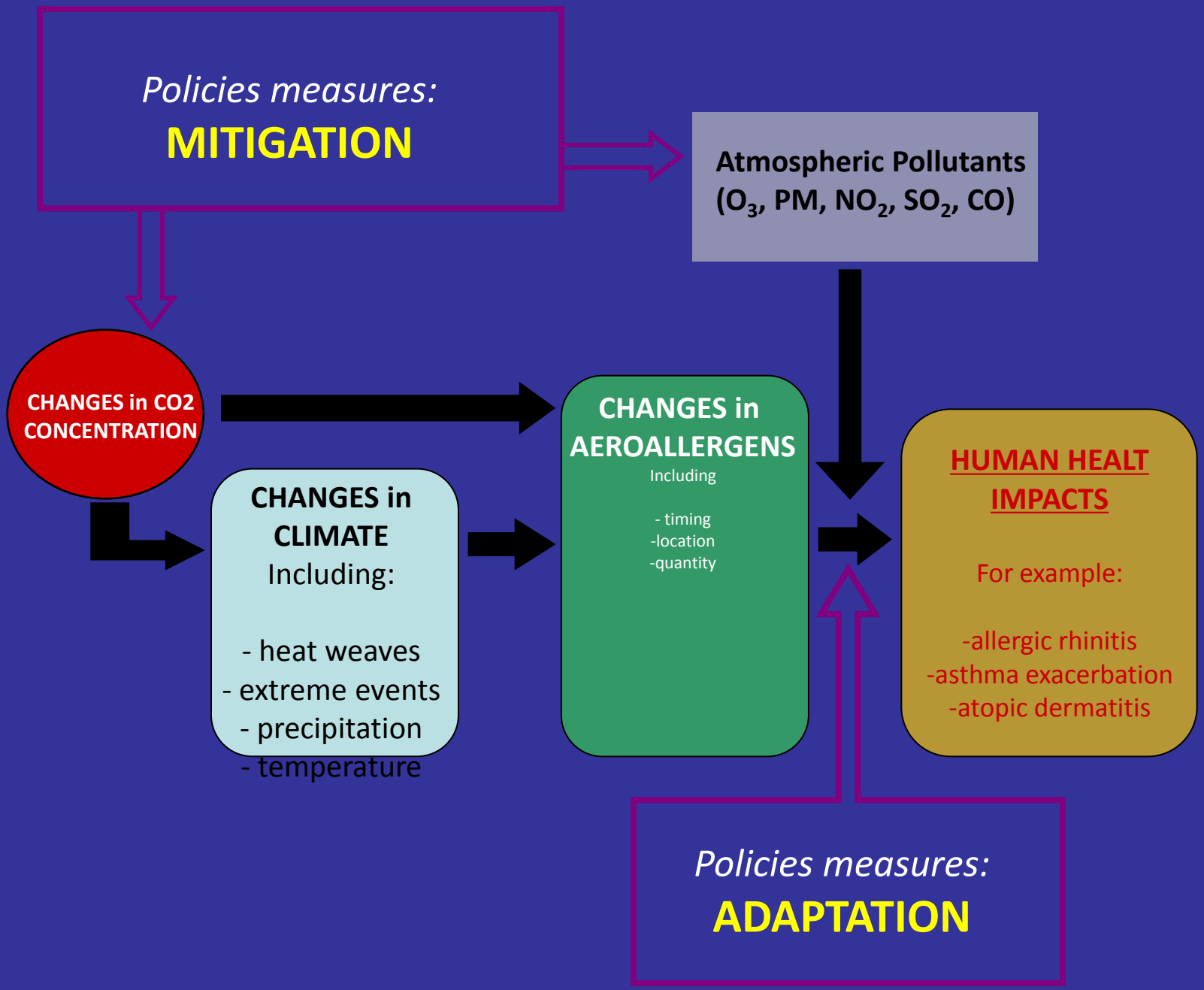
Sulla base di queste premesse (gravità dell'asma provocata, relativa immutabilità ai trattamenti farmacologici fin effettuati) sono da considerare valide anche altre opzioni terapeutiche efficaci [illegible] l'intubazione

Dott. 36775

CONSULENZA SPECIALISTICA: Fisiatrica ca. 6.6.12 Quesito

Take home message:

Subjects affected by pollen allergy should be alert to the danger of being outdoors without correct treatment of rhinitis and asthma during a thunderstorm in the pollen season.


Policies measures:
MITIGATION
Atmospheric Pollutants
(O_3, PM, NO_2, SO_2, CO)
CHANGES in CO2 CONCENTRATION
CHANGES in CLIMATE
Including:
- heat weaves
- extreme events
- precipitation
- temperature
CHANGES in AEROALLERGENS
Including
- timing
-location
-quantity
HUMAN HEALT IMPACTS
For example:
-allergic rhinitis
-asthma exacerbation
-atopic dermatitis
Policies measures:
ADAPTATION

What can we do?

Decreasing use of fossil fuels and controlling vehicle emissions.
Reducing the private traffic in towns.
Increased use of public transport,Cyclinga nd walking.
Planting in cities non-allergenic trees
Minimize outdoor activity on days with high pollution
Suggest patients live in remote areas from heavy traffic
Reduction in meat consumption

Two for the price of one: climate change mitigation measures also reduce air pollution

WAO
WORLD ALLERGY ORGANIZATION

Each year 13 millions of forests ‘ hectares are destroyed or deteriorated.

In the last 50 years 50% of pluvial forests of our Planet have been destroyed.

Food cultivation on wasted areas of tropical pluvial forests determined about 35% of deforestation in South America, 70% in African and 50 % in Asian countries

WAOJ-D-16-00018

Climate change and allergy, the contribution of forests of Brazil to a clean atmosphere.

Gennaro D'Amato; Carolina Vitale; Nelson Rosario; Herberto Jose Chong Neto;
Debora Carla Chong-Silva; Francisco Mendonça; Josè Perini; Loraine Landgraf; Dirceu Solé;
Mario Sanchez; Ignacio Ansotegui; Maria D'Amato

World Allergy Organization Journal, in press

WAOJ-D-16-00018

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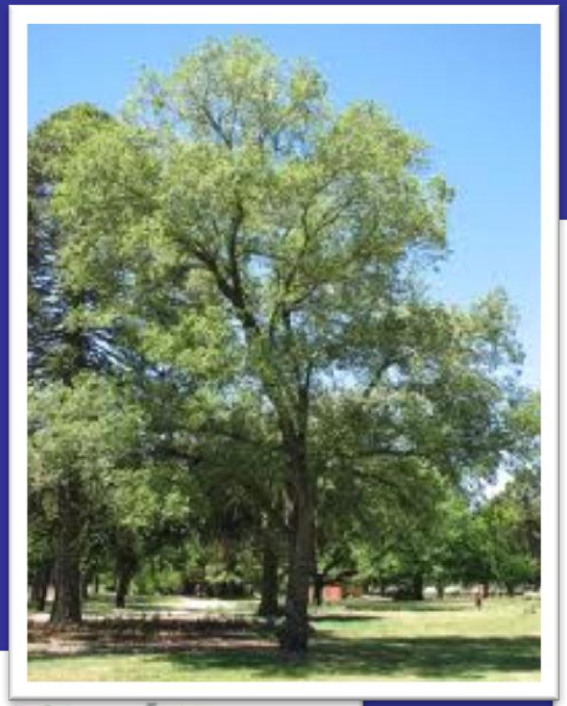
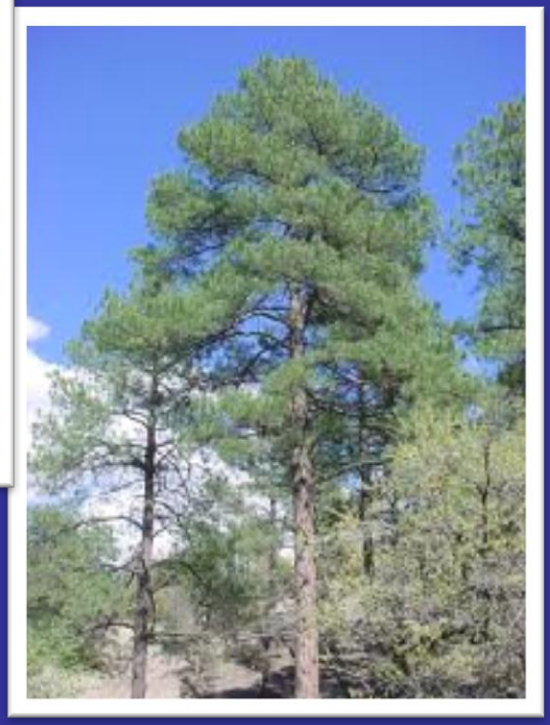
World Allergy Organization Journal, in press

Norway Is The First Country To Ban Deforestation
“This is an important victory in the fight to protect the rainforest.”

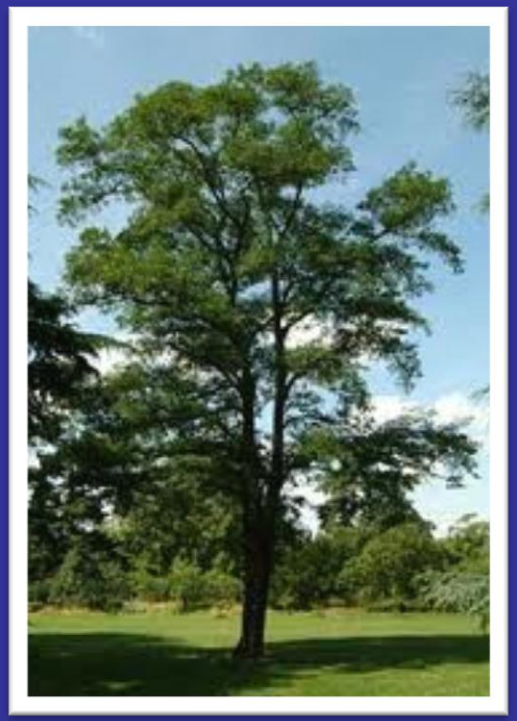
Tiglio (*Tilia cordata*)



Olmo (*Ulmus*)



Pino (*Pinus*)



Robinia pseudoacacia

Platano (*Platanus occidentalis*)

ALBERI A BASSO RISCHIO ALLERGICO E BUON ASSORBIMENTO INQUINANTI

ERS EAACI Task Force on Climate Change, Air Pollution and Respiratory Diseases

WAO Committee on

Climate Change and Allergic Diseases

Strategies to reduce climate changes and air pollution are political in nature, but citizen and in particular health professionals and societies must raise their voices in the decision process to give strong support for clean policies on both national and international levels.

Thanks

gdamatomail@gmail.com

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RESPIRO ITALIA