Lector Dr. Gabriela Iorga

Contributed by Administrator
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Nationalitate: RomÃ¢na Â Data nasterii:Â 9Â Noiembrie 1970Â Interese: fizica atmosfereiÂ Â Detalii:Â Â Activitate didactic : seminarii si laboratoare in limba romana si engleza la fizica generala (optica, mecanica, electricitate si magnetism, fizic moleculara, fizica solidului) si la fizica mediului; Cursuri predate: Fizica mediului in anii 2000 â€“ prezent; Efecte climatice ale poluantilor â€“ incepand din anul universitar 2007-2008; Conducere studenti pentru Diploma de Licenta la specializarea Chimia Mediului;Â Â Activitate de cercetare stiintifica in domeniul fizicii atmosferei: proprietatile fizice, optice si efecte radiative ale aerosolului in troposfera; poluarea aerului, fizica norilor si a precipitatiilor; interactia aerosol-nor-clima; schimbari climatice induse de factori antropici; indepartarea umeda si uscata a particulelor de aerosol din atmosfera. La CESEC: Activitate de cercetare stiintifica in domeniul caracterizarii si modelarii matematice a depunerilor atmosferice de metale si factorilor de comanda climatici ai circuitelor biogeochimice ale metalelor.Â Â 1. Lucr ri stiintifice publicate:Â 1)Â Â Â Â Â G. Iorga, S. Stefan (2007) â€œSensitivity of cloud albedo to aerosol concentration and spectral dispers cloud droplet size distributionâ€•, Atmosfera, 20 (3), 247-269;http://www.ejournal.unam.mx/atmosfera/atmosfera_v20-3.htmlÂ AbstractBoth the enhancement of the aerosol number concentration and the relative dispersion of the cloud droplet size distribution (spectral dispersion) on a regional scale can modify the cloud reflectivity. This work is focused on the role that pre-cloud aerosol plays in cloud reflectivity. Log-normal aerosol size distributions were used to describe two aerosol types: marine and rural. The number of aerosols that activate to droplets was obtained based on Abdul-Razzak and Ghanâ€™s (2000) activation parameterization. The cloud albedo taking into account the spectral dispersion effect in the parameterization of cloud effective radius and in the scattering asymmetry factor has been estimated. Two different scaling factors to account for dispersion were used. The sensitivity of cloud albedo to spectral dispersion-cloud droplet number concentration relationship in connection to the changes in liquid water content (LWC), and the cloud droplet effective radius has been also investigated. We obtained higher values of effective radius when dispersion is taken into account, with respect to the base case (without considering dispersion). The inferred absolute differences in effective radius values between calculations with each of the scaling factors are below 0.8 Âµm as LWC ranges between 0.1 and 1.0 g m-3. The optical depth decreased by up to 14% (marine), and up to 29% (continental) when disperÂ-sion is considered in both effective radius and asymmetry factor (Î²LDR scaling factor). Correspondingly, the relative change in cloud albedo is up to 6% (marine) and up to 11% (continental) clouds. For continental clouds, the calculated effective radius when dispersion is considered fits well within the measured range of effective radius in SCAR-B project. The calculated cloud albedo when dispersion is considered shows betÂ-ter agreement with the estimated cloud albedo from measured effective radius in SCAR-B project than the cloud albedo calculated without dispersion. In cleaner conditions of marine clouds, only Î²PL-scaled albedo fits satisfactory within the validity range of albedo inferred using an effective radius-liquid water content relationship proposed by Reid et al. (1999) from ASTEX project. The low correlation coefficient of the efÂ-fective radius-liquid water content parameterization in ASTEX may also play a role within.Â Keywords: Aerosol size distribution, spectral dispersion, effective radius, cloud albedo, indirect aerosol effect.Â Â 2)Â Â Â Â Â G Iorga, R. Hitzenberger, A. Kasper-Giebl, H. Puxbaum (2007) â€œDirect radiative effect modeled for regional aerosols in Central Europe including the effect of relative humidityâ€•, Journal of Geophysical Research, 112, D01204, doi: 10.1029/2005JD006828;Â http://www.agu.org/pubs/crossref/2007.../2005JD006828.shtml AbstractIn view of both the climatic relevance of aerosols and the fact that aerosol burdens in central Europe are heavily impacted by anthropogenic sources, this study is focused on estimating the regional-scale direct radiative effect of aerosols in Austria. The aerosol data (over 80 samples in total) were collected during measurement campaigns at five sampling sites: the urban areas of Vienna, Linz, and Graz and on Mt. Rax (1644 m, regional background aerosol) and Mt. Sonnblick (3106 m, background aerosol). Aerosol mass size distributions were obtained with eight-stage (size range: 0.06â€“16 Î¼m diameter) and six-stage (size range 0.1â€“10 Î¼m) low-pressure cascade impactors. The size-segregated samples were analyzed for total carbon (TC), black carbon (BC), and inorganic ions. The aerosol at these five locations is compared in terms of size distributions, optical properties, and direct forcing. Mie calculations are performed for the dry aerosol at 60 wavelengths in the range 0.3â€“40 Î¼m. Using mass growth factors determined earlier, the optical properties are also estimated for higher relative humidities (60%, 70%, 80%, and 90%). A box model was used to estimate direct radiative forcing (DRF). The presence of absorbing species (BC) was found to reduce the cooling effect of the aerosols. The water-soluble substances dominate radiative forcing at the urban sites, while on Rax and Sonnblick BC plays the most important role. This result can be explained by the effect of the surface albedo, which is much lower in the urban regions (0.16) than at the ice and snow-covered mountain sites. Shortwave (below 4 Î¼m) and longwave surface albedo values for ice were 0.35 and 0.5, while for snow surface albedo, values of 0.8 (shortwave) and 0.5 (longwave) were used. In the case of dry aerosol, especially for urban sites, the unidentified material may contribute a large part to the forcing. Depending on the sampling site the estimated forcing gets more negative with increasing humidity. When humidity changes from 50% to 90%, the factor of forcing change for Graz is about 3 times larger than that for Linz (3.8) and about 5 times greater than that for Vienna (2.4). At the mountain stations the change in forcing with increasing humidity is much less pronounced because of the high surface albedo. The influence of the aerosol mixing state on the single-scattering albedo as well as on DRF is investigated for all sampling sites. As expected, the single-scattering albedo was found to have lower values for internal mixture than for external mixture. Â Keywords: regional aerosols; black carbon; mixing state; radiative forcing; relative humidity; internal external mixture.Â Â 3) R.Sandu, G. Iorga, E. Bacalum, V. Paun, (2007) â€œCloud reflectivity and autoconversion rate: sensitivity to organic compounds for different aerosol typesâ€•, Revista de Chimie-Bucharest, 58 (2), 171-178;Â http://www.revistadechimie.ro/Article_ro.asp?lim=ro&rev=mp&ID=1298Â AbstractA number of aerosol particles released by human activities has the potential to cool the climate system by modifying the cloud radiative properties via the cloud formation process. Although the aerosols are mostly composed of inorganic species, measurements show organic compounds (OC) could also contribute to cloud condensation nuclei concentration and this depends on aerosol type. Our approach involves estimations of the cloud properties and autoconversion rate taking into account measured aerosol number size distributions and current observations of chemical composition for three types of aerosols: marine, rural, urban. We provide a measure of the ability of organics to change these parameters by calculating relative differences in cloud albedo and autoconversion rate when OC is included with respect to the case when only inorganic aerosol species are considered. The presence of organic compounds may enhance the cloud reflectivity by 1-5% and autoconversion rate changes with 2 orders of magnitude when we move from marine to polluted urban case, with respect to the base-case cloud droplet number.Â Keywords: aerosol physical and chemical properties, organic aerosol, cloud albedo, autoconversion rateÂ Â 4)Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â V. Paun, G. Iorga (2006) â€œHumidity calibration system the hygrometers which measure the dew point between (-50,0â€¦20,0) 0Celsiusâ€•, Revista de Chimie-Bucharest, 10, 1007-1009;Â http://www.revistadechimie.ro/Article_ro.asp?lim=ro&rev=mp&ID=1145Â AbstractThe paper describes the principle of generation, procedure of handling, as well as stability and uniformity of the temperature and humidity, in the test chamber. The theory of the two-pressure humidity atmosphere producer is reviewed. A humidity generator was designed and constructed in order to establish humidity standard and to calibrate humidity sensors. Normal operating limits are within the range (-50,0...+20,0) 0C with an uncertainty of 0,44 0C. The system was assured by dew point hygrometer. For characterizing the quality of a measured result, the uncertainty must be expressed and evaluated. This paper also describes the modelling of the measurements of the relative humidity Y. The relative humidity is not directly measured, being estimated from N other quantities (X1, X2... XN) through a functional relationship. The temperature of the gas, pressure and flow represent the input quantities whose values and uncertainties are directly determined in the currentmeasurement.

Keywords: humidity of gases, reference standards, measurement uncertainty, evaluation methodÂ Â 5)Â Â Â Â Â G. Semenescu C. Cioaca, B. Iorga, G. Gughea (2002) â€œMediator role of some organic substances in the charge transfer on metalâ€“electrolyte interfaceâ€•, Acta Chimica Slovenica, 49, 121-138;Â http://acta.chem-soc.si/49/graph/49-1-graph.htmlÂ Â 5) G. Semenescu, C. Cioaca, G. Gughea, B. Iorga (2002) â€œPhenomenological considerations rely on the double mixed electric layer model at the electrode â€“ electrolyte interfaceâ€•, Acta Chimica Slovenica, 49 (4) 743-754.Â http://acta.chem-soc.si/49/graph/49-4-graph.htmÂ Â Â 2. Publicatii didactice :Â Â 1. G. Iorga, B. Iorga, V. Paun, â€œTermodinamica si fizica molecularaÂ â€“ Lucrari de laboratorâ€•, Editura Universitatii din Bucuresti, Bucuresti, Romania, 2005, ISBN: 973-737-116-X;2. G. Gughea, â€œLaborator de opticaâ€• in C. Danciulescu, G. Gughea, B. Iorga, â€œElectricitate, magnetism si optica â€“ curs s laboratorâ€•, Editura Universitatii din Bucuresti, Bucuresti, Romania, 2000, ISBN: 973-575-470-3;3.Â Â Â Â Â C. Plosceanu, B. Iorga, G. Gughea, â€œOptica â€“ Culegere de problemeâ€•, Editura Universitatii din Bucuresti, Romania, 1999, ISBN: 973-575- 7;Â 3. Premii obtinute:3.1Â Premiul CNCSIS si UEFISCSU, PN II-RU-PRECISI-2007-1, pentru articolul â€œSensitivity of cloud albedo to aerosol concentration and spectral dispersion of cloud droplet size distributionâ€•, Atmosfera, 20 (3), 247-269, 2007.3.2Â Premiul Universitatii din Bucuresti pentru articolul â€œHumidity calibration system used for calibration of the hygrometers which measure the dew point between (-50,0â€¦20,0) 0Celsiusâ€•, Revista de Chimie-Bucharest, 10, 1007-1009, 2006.4. Seminar invitat cu titlul Â«Â Mechanisms of Climate Forcing by Aerosol â€“ Theory and ModellingÂ Â», 26 Martie 2004, Vienna University of Technology, Viena, AustriaÂ Â 5. Consultant stiintific:Â 1.Â Â Â Â Â Pentru editia in limba romana a cartii Â«Â L'Univers et l'espaceÂ Â» editata sub titlul Â«Â UniversulÂ Â», traducere din limba franceza de catre Ana Andreescu, Editura RAO, Bucuresti, 2003, ISBN : 973 â€“ 8175 â€“ 59 â€“ 3.2.Â Â Â Â Â Pentru editia in limba romana a cartii Â«Â Modern autor Prof. Dr. Erich Ãœbelacker, editata sub titlul Â«Â Fizica ModernaÂ», traducere din limba germana de catre Mihai Moroiu, Editura RAO, Bucuresti, 2001, ISBN : 973 â€“ 8175 â€“ 39 â€“ 9.