Paper	Platform/Methods	Findings	Assumptions/Caveats
Durkee, et al., 2000: "The impact of ship-produced aerosols on the microstructure and albedo of warm marine stratocumulus clouds..."	Monterey Area Ship Track (MAST) experiment: 4 aircraft, 1 R/V, measuring Navy/merchant ships in the stratocu deck off the California coast in June 1994	Diesel ships (with accumulation-mode emissions) produced ship tracks, while nuclear/steam/gas turbine-powered ships did not	The value of critical supersaturation is the same in and out of ship tracks;
Leaitch, et al., 2010: "Cloud albedo increase from carbonaceous aerosol," Atmospheric Chemistry and Physics.	Aircraft meas (Convair 580) of stratocu in the Atlantic measured on 13 and 14 October 2003; measured aer/cloud number/size, LWC, cloud light extinction, aerosol chem comp; input to model to get CDNC, albedo	Polluted day CDNC were 3x larger than unpolluted CDNC. Modelled CDNC agreed with obs if carbonaceous particles are externally mixed and highly hygroscopic or internally mixed w/ sulfate. Cld albedo inc by 6%	Sulfate/OM densities assumed; AMS set to not measure NaCl; assumptions of model inputs (chemistry, cloud updraft velocity)
Ackerman et al 2000, “Effects of Aerosols on Cloud Albedo: Evaluation of Twomey's Param. of Cloud Susceptibility using Meas of Ship tracks” (cites Durkee et al)	MAST experiment: specifically 2 aircraft; albedo and number concentrations were measured	Observations found Twomey's 1991 param of the albedo-droplet conc. relationship (dA/dN) agreed well. Ship tracks also had increased cloud thickness (decreased LWC and larger, broader droplet size distrib)	Cloud liquid water is an independent parameter wrt droplet size distribution or concentrations; horizontally inhomogeneous conditions produce outliers
Han et al 2002, “Three Different Behaviors of Liquid Water Path of Water Clouds in Aerosol-Cloud Interactions” (cites Durkee et al)	Cloud optical thickness, reff, LWP, column number concentrations from ISCCP satellite data for January, April, July, October 1987; NOAA satellites for Tatm, Tsfc, q, O3 (marine vs continental)	LWP is not invariant in aerosol indirect effects: found significant frequencies of negative LW sensitivities (LWC decreases with increased N), more common in summer hemisphere	Cloud top temperatures >273K (warm clouds); optical thickness 1<=tau<15 (thick clouds); daytime (afternoon) only; statistical analysis rather than before/after (like ship track studies)
Van Renken et al 2003, “Toward aerosol/cloud condensation nuclei (CCN) closure during CRYSTAL-FACE” (cites Durkee et al)	CRYSTAL-FACE field campaign off southwest Florida in July; CCN counters flown on Twin Otter; sampling cirrus anvils (marine vs continental air masses)	CCN concentrations predicted from Köhler theory and measured CCN concentrations had “good general agreement”	Assumed pure ammonium sulfate;

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Coakley et al 1987: Effect of ship-stack effluents on cloud reflectivity, *Science* (cited by Durkee et al)	NOAA-9 AVHRR satellite data; low-level stratus/stratocumulus, maritime, 3.7um (~NIR), 0.63 um (VIS), 11 um (IR)	Ship track exhaust increased cloud reflectivity at the 3.7 um and 0.63um wavelengths	Cloud populations were deemed to be similar (and thus comparable) by observing the 11um channel
Schreier et al 2006, “Impact of ship emissions on the microphys, optical, and radiative props of marine stratus: a case study”	MODIS (Terra) satellite data from February 2003, looking at scenes off the North American west coast (ship tracks)	Developed an algorithm to distinguish ship-tracks from satellites; derived cloud optical and microphysical properties from radiances/reflectivities; ship tracks increase outgoing solar, decrease incoming solar	Automated ship-track ID algorithm based on reflectance thresholds; only one scene is used, 11:25 local overpass time, solar zenith angle averaged at 63 deg.
Kim et al 2008, “The role of adiabaticity in the aerosol first indirect effect” (cited by Leaitch et al)	1999-2001, Southern Great Plains site: ground instruments measuring COD, LWP, scattering coeff, cloud boundaries, T, RH, wind speed	Cloud optical depth is governed primarily by LWP, then also adiabaticity; re is equally sensitive to adiabaticity and LWP	Assume “adiabaticity” is the average of 6 soundings taken
Dusek et al 2006, “Size matters more than chemistry for cloud-nucleating ability of aerosol particles,” *Science* (cited by Leaitch et al)	“non-urban” German site, FACE-2004, July-August 2004; CCN counter to measure number of activated CCN as a function of supersat	CCN activation depends much more strongly on size distribution rather than chemical composition	Considers 2 “continental” air masses, one “marine,” and one “polluted”
Leaitch et al 1996, “Physical and chemical obs in marine stratus during the 1993 NARE: Factors controlling cloud droplet num concent” (cited by Leaitch et al)	North Atlantic Regional Experiment, August-Sept 1993, aircraft observations: aerosol/cloud size distrib, LWC, wind speed (marine vs continental)	In-cloud droplet number increased with out-cloud aerosol number (weakly); the relationship was strengthened for “lightly” turbulent air as opposed to smooth air	Air mass back trajectories accurate to +/-400m; Na estimated just below cloud level rather than at same z