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This talk is the first of two (the second to be given by A. Raich) that discuss the following results. Let  $\Omega \subset \mathbb{C}^n$  be a bounded smooth pseudoconvex domain. We show that compactness of the complex Green operator  $G_q$  on  $(0, q)$ -forms on  $b\Omega$  implies compactness of the  $\bar{\partial}$ -Neumann operator  $N_q$  on  $\Omega$ . We prove that if  $1 \leq q \leq (n - 2)$  and  $b\Omega$  satisfies  $(P_q)$  and  $(P_{n-q-1})$ , then  $G_q$  is a compact operator (and so is  $G_{n-1-q}$ ). Our method relies on a jump type formula to represent forms on the boundary, and we prove an auxiliary compactness result for an ‘annulus’ between two pseudoconvex domains. Our results, combined with the known characterization of compactness in the  $\bar{\partial}$ -Neumann problem on locally convexifiable domains, yield the corresponding characterization of compactness of the complex Green operator(s) on these domains. (Received July 20, 2007)