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We study the Iwasawa theory of  $p$ -adic representations at non-ordinary primes, over the cyclotomic tower of a number field that is either totally real or CM. In particular, under certain technical assumptions, we construct Sprung-type Coleman maps on the local Iwasawa cohomology groups and use them to define integral  $p$ -adic L-functions and cotorsion Selmer groups. This allows us to reformulate Perrin-Riou's main conjecture in terms of these objects, in the same fashion as Kobayashi's  $\pm$ -Iwasawa theory for supersingular elliptic curves. (Received August 18, 2014)