

### Legend

**DESCRIPTION OF MAP UNITS**

**IGNEOUS ROCKS**

**Cretaceous**

- Kd** Alkali intrusive rocks: Lamprophyres, the dark colored dikes (Camptonite and Monchiquite), are brown weathering, fine to medium grained, mafic rocks commonly with phenocrysts of biotite and/or amphibole. The light colored dikes are Bostonite, a tan-to pink-weathering, pink, red or cream colored, fine-grained trachyte, some with feldspar phenocrysts. Age range: 130-110 Ma to 105-110 Ma. (McHone and McHone, 1999). Orange symbols are dikes from this study, yellow are from Welby, 1961 and Stanley and Sarkesian, 1972.

**SEDIMENTARY ROCKS ON THE LOWER PLATE OF THE CHAMPLAIN THRUST**

**Ordovician**

- Osp** Stony Point Formation: Mud brown-weathering, very fine grained, dark gray shale with interbedded limestone and silty dolomite; gradational contact with underlying Ogl; hornfels at contact with Barber Hill stock. Stony Point and Isenelle Formations were not mapped separately in the Charlotte area; all shales were calcareous.
- Ogl** Glens Falls Fm.: Gray-weathering, fine grained, thin bedded, fossiliferous, gray limestone with shaly interbeds; contact with Osp is gradational with percent of shale beds increasing as the contact is approached.
- Oo** Orwell Fm.: Massively bedded, light gray-weathering, fossiliferous gray limestone.
- Ocg** Chazy Group: Light gray-weathering, fine grained, fossiliferous gray limestone; fabric selective dolomitization produces a "chicken wire" appearance on outcrop surface.
- Ocbr** Bridport Member of the Chipman Fm.: Buff to light orange-weathering, thickly bedded to massive dolomite; rectangular, steeply dipping fracture pattern give outcrops a distinctive appearance.
- Ob** Bascom Fm.: Interbedded limestone and dolomite; sandy dolomite beds produce a characteristic ribbed appearance in weathered outcrops.
- Oth** Tribes Hill Fm.: Gray weathering, fine to medium grained, light gray dolomite breccia, sandy laminated dolomite, and massive dolomite; chert nodules common. The base of Oth is defined following Landing et al. (2003) as a debris flow composed of imbricated cross-bedded dolomitic sandstone fragments on Thompson's Point.

**UNCONFORMITY**

**Cambrian**

- Cif** Little Falls Fm.: Gray-weathering, fine to medium grained, light gray dolomite breccia and massive dolomite; chert nodules common.

**MIDDLE PROTEROZOIC METAMORPHIC ROCKS EXPOSED IN NEW YORK**

- Yu**

**SEDIMENTARY ROCKS ON THE UPPER PLATE OF THE CHAMPLAIN THRUST**

**Ordovician**

- Ocu** Cutting Fm.: Gray-weathering, thick bedded to massive, fine to medium grained, equigranular gray dolomite.
- Os** Shelburne Fm.: White-weathering, mottled gray and white, fine to very fine grained gray limestone and white marble; commonly with thin (<1mm) reliculated rusty-weathering dolomite lines throughout, locally karstic.

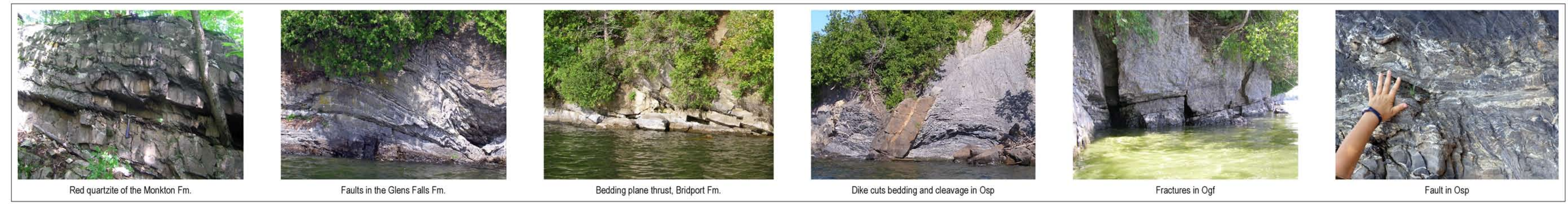
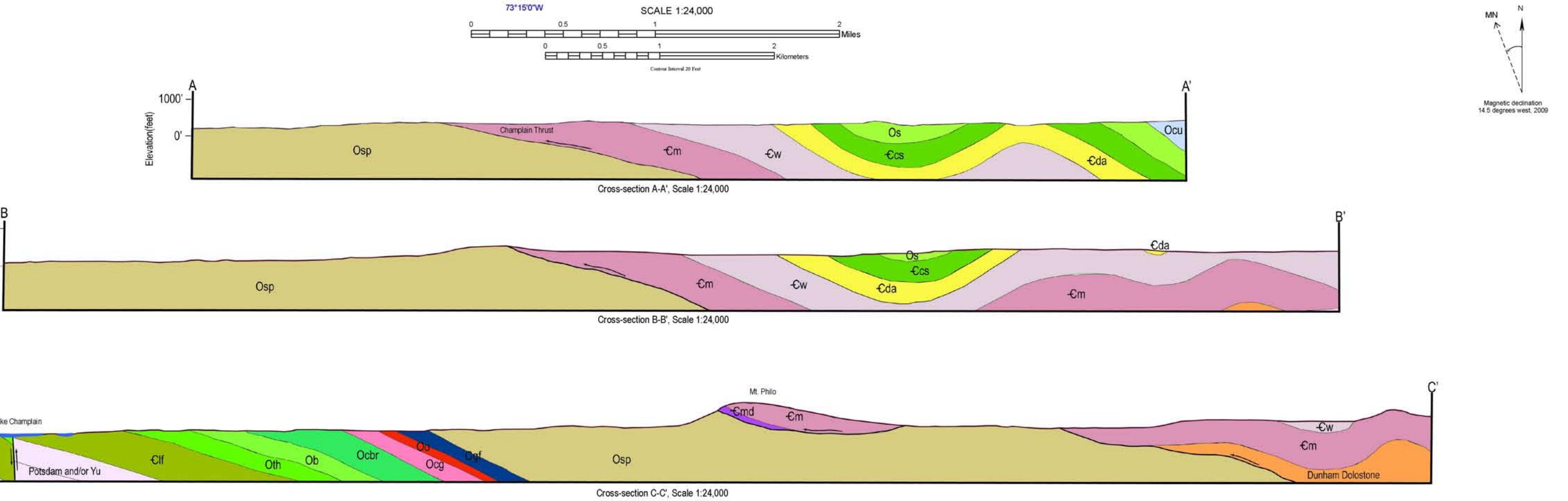
**Cambrian**

- Ccs** Clarendon Springs Fm.: Tan-weathering, massive, cream to light gray dolomite.
- Cda** Danby Fm.: Orange and punky-weathering, thin to thick bedded, fine to medium grained, gray pebbly quartzite, massive, light gray, vitreous quartzite, and laminated sandy dolomite; cross-beds are common. Contact with Cw is gradational over approximately 20 meters.
- Cw** Wincocks Fm.: Buff-weathering, massive to thick bedded, fine-grained, gray to pink dolomite; interbedded with sandy, laminated dolomite +/- cross-beds; interbedded over approximately 20 meters with Cm at base; contact with Cda is gradational.
- Cm** Monkton Fm.: Purplish brown-weathering, fine to medium grained, dark red to white, thin (1 - 10 cm) bedded quartzite with interbedded shale and dolomite; mud cracks and ripple marks occur along bedding planes; upper contact with Cw is by interbedding across approximately 20 meters of thickness.
- Cmd** Buff-weathering pink to gray dolomite member of the Monkton Fm.

**DESCRIPTION OF MAP SYMBOLS**

- Contact, dashed where approximate
- High angle fault, dashed where inferred, dotted where obscured by lake
- Champlain Thrust Fault, dashed where approximate
- Strike and dip of bedding
- Strike and dip of cleavage
- Strike and dip of fold axial surface
- Strike of steeply dipping fractures, box shows dip direction.
- Bedding plane thrust
- Field stations
- Outcrop location from Welby, 1961
- Water well log used to constrain bedrock contact
- Line of cross-section
- Lake, pond, stream from VCGI.org
- Buildings (from ES11)
- Roads (from Vermont Agency of Transportation)

The 20ft contours (Statewide extent) were generated using the VTI's "Hydrologically Corrected" Digital Elevation Model (VTHYDRODEM) available through vcti.org. The Hydro digital elevation model was processed using Spatial Analyst's focal statistics tool to smooth the dataset. Coordinate System: Vermont State Plane, meters, NAD 83. Grid overlay on map is Universal Transverse Mercator, Zone 18N, NAD 83. Digital Cartography by Marjorie Gale. Date: September 2009



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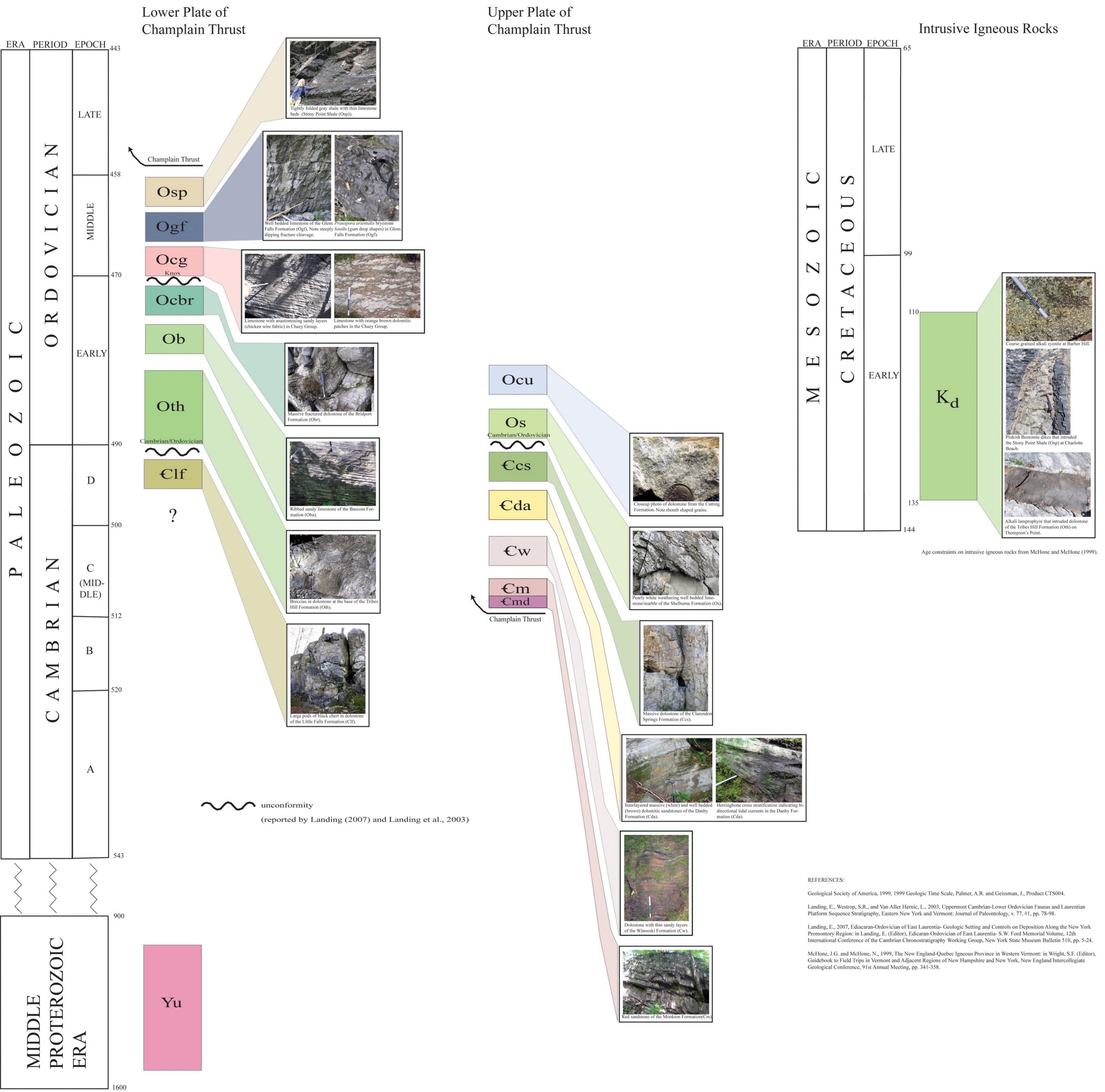


## OPEN FILE REPORT VG09-5- BEDROCK GEOLOGIC MAP OF CHARLOTTE, VERMONT

by  
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2009



# Stratigraphic Column for the Town of Charlotte





# Fracture Data by Domain for the Town of Charlotte

